

# A Survey of ChalleNGe Program Teachers: Their Characteristics and Pedagogical Approaches

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August 2015





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**August 2015**

A handwritten signature in black ink that reads "Alan J. Marcus".

Alan J. Marcus, Acting Director  
Fleet and Operational Manpower Team  
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<b>REPORT DOCUMENTATION PAGE</b>				<i>Form Approved</i> <b>OMB No. 0704-0188</b>	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. <b>PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.</b>					
<b>1. REPORT DATE (DD-MM-YYYY)</b> 08-2015		<b>2. REPORT TYPE</b> Final		<b>3. DATES COVERED (From - To)</b>	
<b>4. TITLE AND SUBTITLE</b> A Survey of ChalleNGe Program Teachers: Their Characteristics and Pedagogical Approaches				<b>5a. CONTRACT NUMBER</b> N00014-11-D-0323	
				<b>5b. GRANT NUMBER</b>	
				<b>5c. PROGRAM ELEMENT NUMBER</b> N/A	
<b>6. AUTHOR(S)</b> Lauren D. Malone, Jennifer R. Atkin				<b>5d. PROJECT NUMBER</b> N/A	
				<b>5e. TASK NUMBER</b> A30530	
				<b>5f. WORK UNIT NUMBER</b>	
<b>7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)</b>  Center for Naval Analyses 3003 Washington Blvd Arlington, VA 22201				<b>8. PERFORMING ORGANIZATION REPORT NUMBER</b> DRM-2015-U-010900-Final	
<b>9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)</b> Deputy Assistant Secretary of Defense for Reserve Affairs (Resources) 1500 Defense Pentagon Washington, DC 20301-1500				<b>10. SPONSOR/MONITOR'S ACRONYM(S)</b>	
				<b>11. SPONSOR/MONITOR'S REPORT NUMBER(S)</b>	
<b>12. DISTRIBUTION / AVAILABILITY STATEMENT</b>  Distribution unlimited.					
<b>13. SUPPLEMENTARY NOTES</b>					
<b>14. ABSTRACT</b> This study examines how teachers' qualifications and pedagogical approaches differ across the 35 National Guard Youth Challenge Program (ChalleNGe) sites. ChalleNGe serves high school dropouts with both academic and noncognitive components, including a postresidential mentoring phase. We developed and fielded an online teacher survey. Using the survey data and information from the programs' annual reports, we investigate whether different teacher qualifications or pedagogical approaches are correlated with programs' average cadet outcomes (e.g., graduation rates, postresidential placement). We also attempt to identify classroom methods that may be effective with disadvantaged youth, who typically perform below grade-level (the ChalleNGe student body). Of the numerous factors we considered, only a few were found to be significantly correlated with cadet outcomes—namely, the prevalence of postgraduate degrees among teaching staff, consistency in the gender makeup of classes, a greater emphasis on small-group instruction, emphasis on advanced math and "math life skills," and a focus on critiquing and evaluating texts and writing to summarize.					
<b>15. SUBJECT TERMS</b> ChalleNGe, Teacher, Survey, Students, Pedagogy, Qualifications, Methods, Math, English, Language Arts, GED, Dropout					
<b>16. SECURITY CLASSIFICATION OF:</b>			<b>17. LIMITATION OF ABSTRACT</b>	<b>18. NUMBER OF PAGES</b>	<b>19a. NAME OF RESPONSIBLE PERSON</b> Knowledge Center/Robert Richards
<b>a. REPORT</b> U	<b>b. ABSTRACT</b> U	<b>c. THIS PAGE</b> U			<b>19b. TELEPHONE NUMBER (include area code)</b> 703-824-2104
			SAR	102	



## Abstract

This study examines how teachers' qualifications and pedagogical approaches differ across the 35 National Guard Youth Challenge Program (ChalleNGe) sites. ChalleNGe serves high school dropouts with both academic and noncognitive components, including a postresidential mentoring phase. We developed and fielded an online teacher survey. Using the survey data and information from the programs' annual reports, we investigate whether different teacher qualifications or pedagogical approaches are correlated with programs' average cadet outcomes (e.g., graduation rates, postresidential placement). We also attempt to identify classroom methods that may be effective with disadvantaged youth, who typically perform below grade-level (the ChalleNGe student body). Of the numerous factors we considered, only a few were found to be significantly correlated with cadet outcomes—namely, the prevalence of postgraduate degrees among teaching staff, consistency in the gender makeup of classes, a greater emphasis on small-group instruction, emphasis on advanced math and “math life skills,” and a focus on critiquing and evaluating texts and writing to summarize.

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# Executive Summary

## Background

The National Guard Youth Challenge Program (ChalleNGe) is a quasi-military, 22-week residential program designed to serve 16- to 18-year-old high school dropouts as well as students at risk of dropping out (students who have earned far fewer credits than expected are considered at risk of dropping out). The program also includes a 12-month postresidential mentoring component. During this time, cadets and their mentors are asked to report back to the program regarding whether the cadet is employed, in school, or serving in the military. Currently, ChalleNGe is offered at 35 locations in 29 states and Puerto Rico.

Many cadets arriving at ChalleNGe have lacked guidance or leadership throughout their adolescent years, which may have contributed to their struggles in the traditional high-school environment. The ChalleNGe staff will, for some cadets, be the first positive role models they have encountered in quite some time. In this light, the ChalleNGe teachers, with whom the cadets interact frequently and for extended periods of time, are important to cadets' overall success—not only academically but also in the growth, maturation, and development of trusting relationships that occur at ChalleNGe.

Historically, however, little has been known about the ChalleNGe teachers' characteristics, teaching philosophies, or pedagogical methods—neither regarding the program as a whole nor in terms of program-level variation. As a result, it was not possible to evaluate whether any differences in the programs' teachers (in terms of either qualifications or teaching strategies) had lasting implications for cadets. With this study, we have begun to fill that void.

The main contribution of this paper is to document differences in the composition of teaching staffs across ChalleNGe programs. Secondly, we attempt to determine if any variation in teachers' qualifications or pedagogical approaches across ChalleNGe programs are statistically significantly associated with cadets' average outcomes.

## Approach

Because ChalleNGe had no preexisting information about its teachers, tackling these issues first required the collection of primary data. To do this, we administered an online survey to all ChalleNGe teachers. The survey asked about their qualifications (including teaching certification or license, college majors, highest educational degree attained, and previous teaching experience), their typical class size and students' characteristics, and their pedagogical approaches and teaching philosophies. We further asked the math and English/language arts teachers a series of more detailed questions, since these subjects are generally considered the two core curricular areas.

Since our outcome variables are average measures—e.g., a program's average 2014 graduation rate or average 2014 improvement in the Test of Adult Basic Education (TABE) score—we are limited to running program-level regressions (with a sample size of 34) and we therefore collapse all teacher-level information into program averages. A few important caveats regarding our analysis follow:

1. We cannot match teachers to particular cadets because *all* cadets are under the purview of *all* teachers at most ChalleNGe programs.
2. We do not have postresidential outcome data on all cadets. The ChalleNGe programs attempt to follow up with cadets 1, 6, and 12 months after graduation, but not all cadets are reachable and some do not respond. This sample of cadets may suffer from selection bias, which could result in either understating or overstating any effects on postresidential outcomes.
3. We calculated postresidential placement rates by dividing the number placed by 1, 6, or 12 months by the total number of graduates in that class. It would be more accurate to divide by the number of cadets who provided postresidential placement information, but this information is not available.
4. The most recent postresidential data available are for *previous* classes. Therefore, our findings regarding postresidential outcomes will be least accurate for those programs that have experienced significant teacher turnover since the postresidential cadets in the 2014 reports graduated.

With these caveats in mind, we summarize our most notable findings.



## Findings

The wide range of questions we asked the ChalleNGe teachers and the resulting volume of information we collected produced a wide range of findings. A few are particularly noteworthy. First, the ChalleNGe teacher population as a whole is a well-qualified teaching force. There is, of course, variation from one program to the next, but overall, 45 percent of ChalleNGe teachers hold more than a bachelor's degree, and the average teacher has 14 years' teaching experience and 5 years' experience teaching at ChalleNGe. Thus, the average cadet is being taught by staff who are not only well educated but also have significant classroom experience. In addition, with an average of 5 years of ChalleNGe teaching experience, these teachers will not be fazed by the behavioral and attention problems likely to emerge in a ChalleNGe classroom; they are prepared to deal with such issues effectively.

We also found significant variation in teachers' pedagogies across ChalleNGe programs—including how cadets are assigned to classes, whether male and female cadets are separated or taught in mixed-gender classrooms, how instructors divide their time, and the amount of homework assigned in a typical week. Only some elements of teachers' pedagogies, however, correlate with average cadet outcomes. Four particular findings stand out as having potential policy implications:

- Consistency in the male/female composition of the classroom matters. Regardless of whether the classes are always gender mixed or always gender separated, either alternative led to better cadet outcomes than having some classes with mixed gender and some separated.
- Cadets' 1-month placement rates are positively and significantly correlated with the amount of small-group and individual instruction (versus whole group).
- Cadets benefit from greater emphasis on advanced, rather than basic, math topics and "math life skills."
- The specific types of writing and reading assigned in English/language arts classes make a difference.

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# Contents

<b>Introduction.....</b>	<b>1</b>
<b>Methodology.....</b>	<b>4</b>
<b>Our Sample.....</b>	<b>8</b>
Response rates.....	8
Program type.....	9
Subjects currently taught .....	11
Other qualification measures .....	14
<b>Teachers' Qualifications.....</b>	<b>18</b>
<b>Pedagogy .....</b>	<b>23</b>
Cadet class assignments.....	23
Division of teachers' instructional time .....	28
Pedagogical methods.....	32
Subject-specific pedagogical approaches.....	37
Math .....	37
English/language arts.....	44
<b>Recommended Classroom Strategies.....</b>	<b>53</b>
<b>Conclusions and Recommendations .....</b>	<b>55</b>
Differences across programs.....	56
Teacher qualifications and cadet outcomes .....	56
Pedagogy and cadet outcomes .....	57
Math .....	58
English/language arts.....	58
<b>Appendix: Teacher Survey .....</b>	<b>60</b>
<b>References.....</b>	<b>82</b>

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## List of Figures

Figure 1.	Survey response rates, by ChalleNGe program .....	9
Figure 2.	Distribution of teachers' program types (GED granting, HS-diploma granting, credit recovery).....	10
Figure 3.	Program-wide distribution of teachers, by program type .....	11
Figure 4.	Distribution of subjects taught (all ChalleNGe programs).....	11
Figure 5.	Percentage of teachers holding more than a bachelor's degree, by ChalleNGe program .....	13
Figure 6.	Average years of teaching experience, by ChalleNGe program.....	15
Figure 7.	Average years of ChalleNGe teaching experience, by ChalleNGe program .....	16
Figure 8.	Percentage of teachers with a teaching certificate, by ChalleNGe program .....	17
Figure 9.	ChalleNGe teachers' majors and coursework (and their relevance to what they teach), by ChalleNGe program .....	20
Figure 10.	Percentage of teachers who create class groups based on ability, by ChalleNGe program.....	26
Figure 11.	Percentage of teachers who indicated that male and female cadets take their class together, separately, or both, by ChalleNGe program .....	27
Figure 12.	Teachers' average class size, by ChalleNGe program .....	28
Figure 13.	Average hours spent per week instructing the class as a whole, small groups of students, and single students, by ChalleNGe program .....	30
Figure 14.	Average number of hours spent tutoring per week, by ChalleNGe program .....	31
Figure 15.	Average hours teachers spend per week on administrative and disciplinary tasks, by ChalleNGe program .....	32
Figure 16.	Distribution of teachers' course material preparation methods, by ChalleNGe program .....	33
Figure 17.	Average homework hours assigned per week, by ChalleNGe program .....	35
Figure 18.	Average frequency of changing instructional methods for specific students, by ChalleNGe program.....	36
Figure 19.	Frequency of math-class activities .....	39
Figure 20.	Average per-teacher frequency of evaluation type, by ChalleNGe program .....	41

Figure 21.	Math teachers' philosophies, by ChalleNGe program .....	44
Figure 22.	Emphasis placed on basic and advanced English/language arts topics, by ChalleNGe program .....	45
Figure 23.	Frequency of English/language arts activities, for the program as a whole .....	47
Figure 24.	Average number of books teachers require cadets to read, by ChalleNGe program .....	48
Figure 25.	Average frequency of literature types used, all ChalleNGe programs .....	49
Figure 26.	Reading emphasis, by ChalleNGe program .....	50
Figure 27.	Average per-teacher frequency of writing purposes, by ChalleNGe program .....	52

## List of Tables

Table 1.	Distribution of subjects currently taught, by Challenge program.....	12
Table 2.	Challenge teachers' majors, by subject taught.....	19
Table 3.	Marginal changes in average cadet outcomes associated with changes in average teacher qualifications.....	21
Table 4.	Distribution of class assignment methods, by Challenge program...	24
Table 5.	Impact of math-class activities on cadet outcomes .....	40

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## Glossary

ChalleNGe	National Guard Youth Challenge Program
FY	fiscal year
GED	General Educational Development
HS	high school
NAEP	National Assessment of Educational Progress
NGYCP	National Guard Youth Challenge Program
OLS	ordinary least squares
TABE	Test of Adult Basic Education

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# Introduction

The National Guard Youth Challenge Program (ChalleNGe) is a quasi-military, 22-week residential program designed to serve 16- to 18-year-old high school dropouts as well as students at risk of dropping out of school (students who have earned far fewer credits than expected are considered at risk of dropping out). The program also includes a 12-month postresidential mentoring component. During this time, cadets and their mentors are asked to report back to the program regarding whether the cadet is employed, in school, or serving in the military. Currently, ChalleNGe is offered at 35 locations in 29 states and the territory of Puerto Rico.

The ChalleNGe model includes both academic and noncognitive components, such as leadership/followership, responsible citizenship, service to community, life-coping skills, physical fitness, health and hygiene, job skills, and academic excellence. The academic program is administered in a manner similar to that found in a traditional high school setting. Teachers are given curricular guidelines regarding topics they must cover but otherwise have some latitude regarding classroom management and pedagogical methods.

Programs publicize and recruit by advertising, by building relationships with a variety of people who come in contact with at-risk youth, and by word of mouth. Each program typically receives more applications than it can accommodate during each class (each program has two cadet classes per fiscal year). Applicants may be denied admission because of ineligibility or due to space or funding limitations.<sup>1</sup> Programs do not, however, deny admission based on test scores or any other academic requirement.

The primary academic goal of most ChalleNGe programs is for cadets to pass the General Educational Development (GED) tests. Some programs, however, award alternate credentials, such as state high school diplomas, to cadets who complete the program. Still other programs focus on credit recovery, allowing cadets to reenroll in and graduate from their previous high school after completing ChalleNGe. Finally, some programs are considered schools and award regular high school diplomas. These differences are a function of state-level requirements and how the programs choose to operate.

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<sup>1</sup> Eligibility requirements can be found at <https://www.jointservicessupport.org/NGYCP>. They include being a citizen or legal resident of the United States, being free from use of illegal drugs or substances, and being physically and mentally able to participate in the program.

Teachers at ChalleNGe programs come from a wide variety of backgrounds; some are certified teachers, while others are not. Some ChalleNGe teachers have substantial experience in traditional classrooms, some come from a background of working with disadvantaged youth, and some have taught primarily in GED preparatory programs or other adult education programs. The classroom setup varies across ChalleNGe programs as well, since it is left to the programs' discretion. At some programs, teachers specialize in a single subject; at others, teachers work with the same group all day, covering all subjects. Finally, most classrooms are single-sex, but some are not.

While passing the GED or obtaining a high school (HS) diploma or alternate credential is considered the ultimate goal, programs also strive to help cadets make as much academic progress as possible during the residential phase. To gauge cadets' progress, the ChalleNGe programs administer a standardized test (the Test of Adult Basic Education, or TABE) at the beginning and end of the program. Academic gains vary by location and by class. For the FY14 ChalleNGe classes, TABE gains range from 0.1 to 4.3 (e.g., a score of 4.3 indicates performance at the third month of fourth grade). Some of this variation is likely due to differences in the academic abilities of cadets when they enter the program. Gains are more difficult with cadets at higher academic levels, for example, because there is less room for "growth." It is also difficult to realize large academic gains with cadets who arrive at ChalleNGe performing significantly below grade level. Although cadets' incoming academic abilities (and the resulting achievable TABE gains) are factors beyond the ChalleNGe program's control (since there are no academic restrictions on admissions), some of the variation observed in cadets' TABE gains may be due to differences in the pedagogical methods used by ChalleNGe teachers. In this case, modifications to classroom teaching could yield larger academic gains.

In traditional classrooms, the influence of pedagogy on student outcomes is fairly clear, while the influence of a teacher's characteristics, education, and experience is far less clear.<sup>2</sup> Although a broad body of literature addresses student outcomes, virtually no research exists tying the elements of classroom preparation to GED success. This is mainly because most GED test-takers undertake only minimal preparation, and usually not in a classroom setting [4]. Although there is evidence that higher GED test scores are tied to better labor market outcomes, very little is known about what kind of preparation is required for young GED test-takers to obtain these higher GED scores.

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<sup>2</sup> For discussions of classroom instruction and student outcomes, see (along with many others) Swanson and Stevenson (2002) [1] and Tarr et al. (2008) [2]. The first reference is particularly relevant because our surveys include some of the same measures of classroom pedagogy and practice as the National Assessment of Educational Progress (NAEP) surveys. For some of the disparate results on teacher characteristics and student outcomes, see *The Handbook of the Economics of Education* [3].

This study investigates how pedagogical approaches differ across programs and whether these differences correlate with cadet outcomes. It may also suggest classroom methods that are especially effective with disadvantaged youth who perform below grade level. For example, past research shows that high school students performing below grade level are most likely to be taught by "drill-and-kill" methods (i.e., methods focused almost exclusively on rote memorization rather than learning and synthesizing broader concepts), but no analysis has been conducted regarding whether this approach is effective with this population.<sup>3</sup> Finally, we attempt to link classroom practices to the longer term outcome of placement after completing the program. Thus, the main contribution of this paper is to document differences across ChalleNGe programs in the composition of their teaching staff. Secondarily, we attempt to determine if any variation in teachers' qualifications or pedagogical approaches across programs are statistically significantly associated with cadets' average outcomes.

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<sup>3</sup> See, for example, [5].

## Methodology

Our primary data source is an online survey, administered to all ChalleNGe teachers via email. Teachers were asked specifically about their qualifications and previous teaching experience (within and outside ChalleNGe), their typical class size and students' characteristics, as well as their pedagogical approaches and teaching philosophies. In addition, math and language arts teachers were asked a series of more detailed, subject-specific questions about how they use classroom time and on what concepts they focus. The survey was live from October 7, 2014, through November 25, 2014.<sup>4</sup> The survey was designed for ChalleNGe teachers and certain questions are specific to the program. To understand more about classroom practices and techniques, however, we drew from a number of established, national surveys such as [6], [7], [8], [9], and [10].

Our other data source is the ChalleNGe programs' annual reports (supplied by each program to the director of the National Guard Youth Challenge Program (NGYCP)). These reports contain information, by class, on the number of registered cadets, the number that ultimately graduated, the cadets' average scores on the Test of Adult Basic Education, and their postresidential outcomes. The postresidential data indicate how many cadets from previous classes were enrolled in school, had found employment, or had enlisted in the military at the 1-, 6-, and 12-month marks (after their ChalleNGe graduation).

Cadets take the TABE at the beginning and end of ChalleNGe. The TABE, designed for placement of adult learners, is often used as an assessment tool in adult education programs with a focus on passing the GED tests. Each subsection of the TABE is scored to indicate grade level (for example, a score of 9.3 indicates performance at the third month of ninth grade). We use the overall TABE score (formed from averaging scores on the subtests). The subtests are Math, Applied Math, Language, and Reading. The Math section is made up of computational problems requiring test-takers to perform addition, subtraction, multiplication, and division; to work with percentiles, fractions, and exponents; and to solve basic algebra problems. The Applied Math section is made up of word problems requiring the following abilities:

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<sup>4</sup> The initial planned survey duration was shorter, but we extended it in an effort to increase participation since teacher participation was unexpectedly low early on. We also asked the ChalleNGe program directors to encourage their teachers' participation. In a handful of cases, teachers experienced technical difficulties and were unable to access the survey from their systems; we mailed paper versions of the survey to these teachers.

chart and table comprehension, basic equation setup, coordinate graphing, an understanding of some limited geometry, and application of the concepts of fractions, percentiles, and algebra in the context of word problems. The Language section includes questions on grammar and punctuation, combining sentences to preserve their meanings, and some basics of paragraph composition. The Reading section involves reading passages or detailed charts/tables and answering questions about the content.

The intent of our survey and analysis is twofold. First, we aimed to collect information not previously available on the ChalleNGe teacher population to see how teacher qualifications, pedagogical approaches, and other characteristics vary across programs. This analysis relies largely on cross-tabulations of survey results across programs. Second, we wanted to determine whether any particular characteristics—and, thus, any particular differences across programs—would affect cadets’ success. To do so, we use a number of measures of success: program graduation rates; whether cadets have been “placed” 1, 6, or 12 months after ChalleNGe completion (placement includes school enrollment, employment, and military enlistment); and cadets’ improvements on the TABE. We use regression analysis to determine which teacher qualifications and pedagogical methods are most important in determining cadets’ average outcomes. Since our outcome variables are average measures (e.g., a program’s average 2014 graduation rate or average 2014 TABE-score improvement), we are limited to running program-level ordinary least squares (OLS) regressions (with a sample size of 34), and we collapse all teacher-level information into program averages (e.g., average years of teaching experience).<sup>5</sup>

We note a few important caveats regarding our analysis of how teacher qualifications and pedagogical approaches are correlated with cadets’ outcome variables. First, we cannot match teachers to particular cadets because *all* cadets are under the purview of *all* teachers at most ChalleNGe programs. Each program, in general, has only one science teacher, one math teacher, one English teacher, and one social studies teacher; therefore, all cadets take classes from all teachers. The fact that we have no individual-level cadet performance data (which we could theoretically match to specific teachers) does not matter since all cadets would be matched to all teachers.

As a result, we use a program’s *average* graduation rate, TABE improvement, and postresidential placement rates as our outcome variables and use each program’s *average* teacher characteristics and pedagogical methods as our regressors. Thus, we are able to answer only questions about how programs’ average outcome variables change in response to corresponding changes in their average teacher population. By

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<sup>5</sup> Although not presented in our tables and findings throughout this report, the TABE improvement regressions also contain a control for cadets’ average pre-TABE scores. As expected, this variable has a negative and significant impact on TABE improvement over the course of ChalleNGe. The higher the overall TABE scores with which cadets enter ChalleNGe, the smaller their score improvement can be, since there is a maximum score they can attain.

using teachers' average characteristics and pedagogical approaches at a particular program, we are indirectly assuming that the distribution of teachers across classes is identical (i.e., that all cadet classes within a program are taught by teachers with the same characteristics and who use the same approaches). These estimates would be more precise if we were able to identify the specific students taught by each teacher; we could then correlate individual cadets' outcomes with individual teachers' characteristics.<sup>6</sup>

Second, we do not have postresidential outcome data on all cadets. The ChalleNGe programs attempt to follow up with cadets 1, 6, and 12 months after graduation, but not all cadets are reachable and some likely simply do not respond. Our postresidential analysis, clearly, is limited to those cadets the programs were able to contact who were willing to provide the requested information. It is possible that this sample of cadets suffers from selection bias—that is, that those who provide their postresidential statuses are systematically different from those who do not, which could result in either an understatement or overstatement of any effects on postresidential outcomes. In addition, the placement rates we use are calculated by dividing the number placed by 1, 6, or 12 months by the total number of graduates in that class. It would be more accurate to divide the number of cadets placed by the number of cadets who provided postresidential placement information. The number of cadets providing this information, however, is not available. Our placement rates (number placed/number graduated), therefore, are likely to underestimate the true placement rates, since cadets who placed but did not respond to the postresidential surveys are not included. In fact, the only scenario in which our placement rates are *not* underestimates is if all program graduates who were placed responded to the survey and only those who were not placed did not respond. This seems unlikely.

Finally, the most recent postresidential data available are for *previous* classes. This information was extracted from the 2014 annual reports; the postresidential information provided in the 2014 reports pertains to cadets who graduated at least 12 months ago. Thus, the teachers who responded to our survey (administered in October and November of 2014) may not be the teachers responsible for the instruction of those cadets whose postresidential outcomes are captured in the 2014 annual reports. This is not only because we cannot be certain which teachers taught which cadets, but also because teachers who taught the earlier cadets may no longer be at the programs (and thus not be in our survey population).<sup>7</sup> Our findings

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<sup>6</sup> In addition, because we lack data on those who did not respond to our survey, we are forced to assume that the average responder has similar characteristics and pedagogies as the average nonresponder. Without data on nonresponders, it is impossible to know how significantly our results are affected by this selection bias; this is a common analytical challenge of working with survey data.

<sup>7</sup> Thus, our analysis of the correlation between current survey teachers' pedagogies and previous cadets' outcomes has an underlying assumption that the distribution of teachers' characteristics and teaching approaches is constant over time.



regarding postresidential outcomes will therefore be least accurate for programs with significant teacher turnover since the postresidential cadets in the 2014 reports graduated. To gauge how much of a problem this is, we asked each ChalleNGe program to provide information on their annual teacher turnover in recent years (for as far back as they have data). The average teacher turnover rate is 22 percent, meaning that roughly one in five teachers turns over in a given year.<sup>8</sup> Thus, on average, 78 percent of the teachers who completed our survey should be the same teachers who instructed those cadets whose postresidential information is included in the 2014 annual reports. The minimum annual turnover rate is 0 percent in Idaho (although this is based on only two years of data), and the maximum is 44 percent in New Mexico (based on 15 years of available data).

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<sup>8</sup> The ChalleNGe programs provided us with the turnover information they had available and, as a result, the program-level turnover calculations were based on different numbers of years of data. On average, programs had seven years of teacher turnover data available, with a minimum of two years and a maximum of 18 years.

## Our Sample

In this section, we provide summary statistics on our survey population and highlight how they vary across ChalleNGe programs. This information provides background for our results and characterizes our population (and how it might differ from the ChalleNGe teacher population at large) so that we can identify ways in which our findings might be biased. We begin by discussing our survey response rates and then summarize the characteristics of our sample’s teachers—including the type of program at which they teach, the subjects they teach, their educational background, their teaching experience, and whether they hold a teaching certificate.

### Response rates

Our overall response rate was 72 percent: we sent the survey to 252 teachers and received 181 replies.<sup>9</sup> Figure 1 illustrates the response rates for each of the 35 ChalleNGe programs. More than a third of the programs had 100-percent response rates. At the other extreme, one program returned no surveys: Louisiana-Camp Beauregard. Other programs with noticeably low response rates include West Virginia (25 percent), South Carolina (25 percent); Louisiana-Camp Minden (36 percent), and Florida (43 percent). All other programs had response rates of 50 percent or better. On the whole, these are remarkably good response rates: at least half the contacted teachers responded in 30 of the 35 programs.

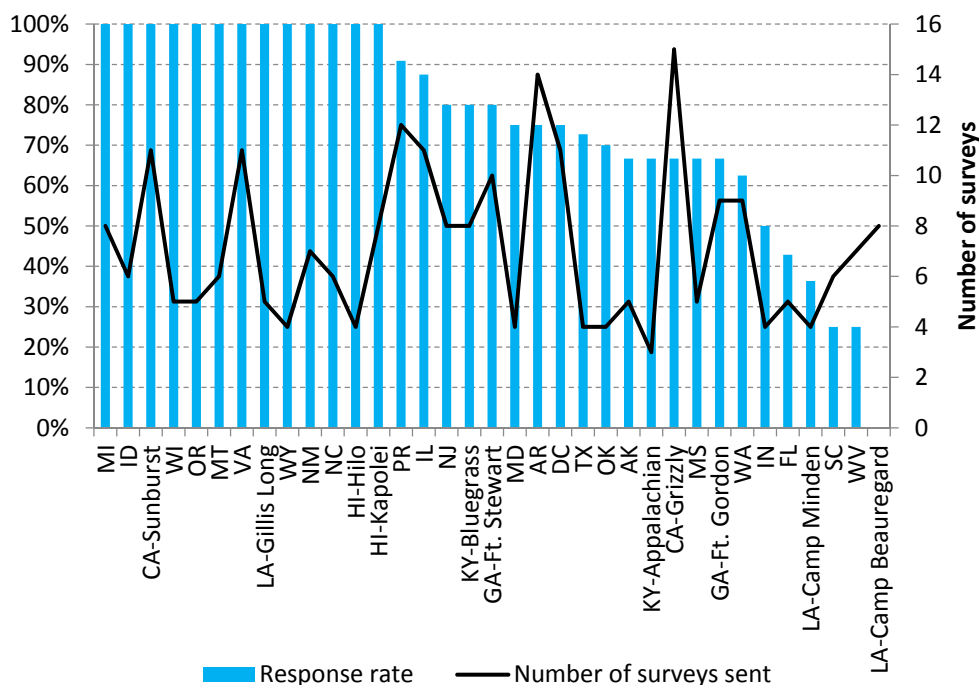
Given these response rates, we have essentially oversampled from the high-response-rate programs and undersampled from the low-response-rate programs. This has the effect of overweighting teachers’ experiences in the former and underweighting those in the latter. If the programs with noticeably low or high response rates are systematically different from those programs whose response rates are closer to the average, our findings may not be representative of the ChalleNGe teacher population

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<sup>9</sup> Some programs returned more surveys than we originally sent. This happened in cases where paper surveys were mailed, and some teachers took it upon themselves to photocopy and distribute the survey to other teachers who had not received it. For the purpose of calculating response rates, we do not include these “additional” surveys in our calculations. Thus, the response rate is capped at 100 percent.

as a whole.<sup>10</sup> It is important to keep these potential discrepancies in mind in interpreting our results.

Figure 1. Survey response rates, by ChalleNGe program<sup>a</sup>



Source: CNA tabulations of teacher survey responses.

<sup>a</sup>. The black line indicates the number of surveys sent to each ChalleNGe program (and thus the number included in our calculation of the response rate).

## Program type

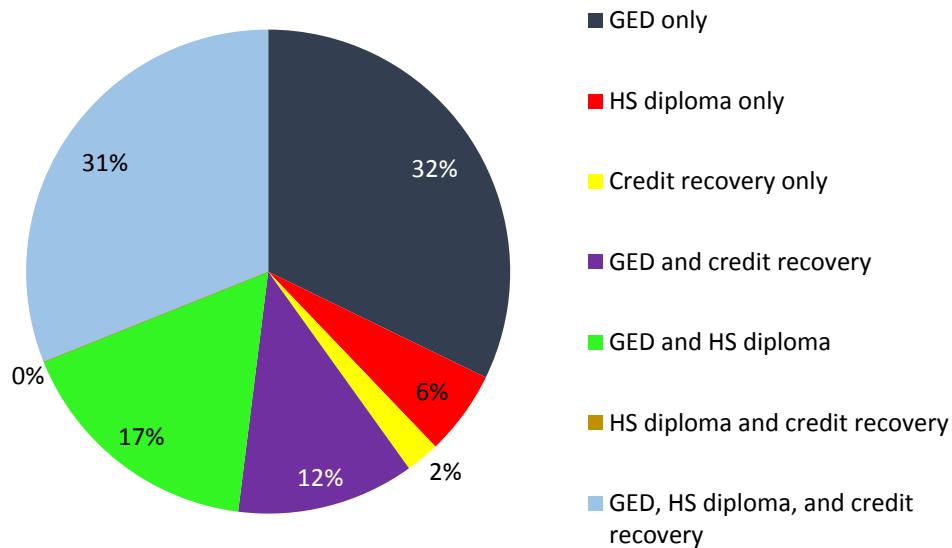
Depending on the program they attend, how many high school credits they have acquired, and their age, ChalleNGe cadets are working toward one of three goals. Cadets who successfully complete ChalleNGe leave the program with a high school (HS) diploma, a GED certificate, or credits enabling them to return to their home high

<sup>10</sup> One particular difference for which we tested is whether there is a significant correlation between response rate and program size (as proxied by the number of teachers). We found no statistically significant relationship between these two factors: teachers from larger programs were no more or less likely to respond than those from smaller programs. In addition, we investigated whether response rates differed systematically with our outcome variables of interest (e.g., graduation rate, placement rates); they do not.

schools and ultimately graduate (this process is called credit recovery). In Figure 2, we display the number of teachers affiliated with each program type, as well as with programs offering more than one option to their cadets. The majority of our survey participants (63 percent) come from either a GED-only program or a program offering all three options. Only 2 percent of the teachers in our sample are from credit-recovery-only programs, and only 6 percent are from HS-diploma-only programs. Most are from programs that offer some combination of options.

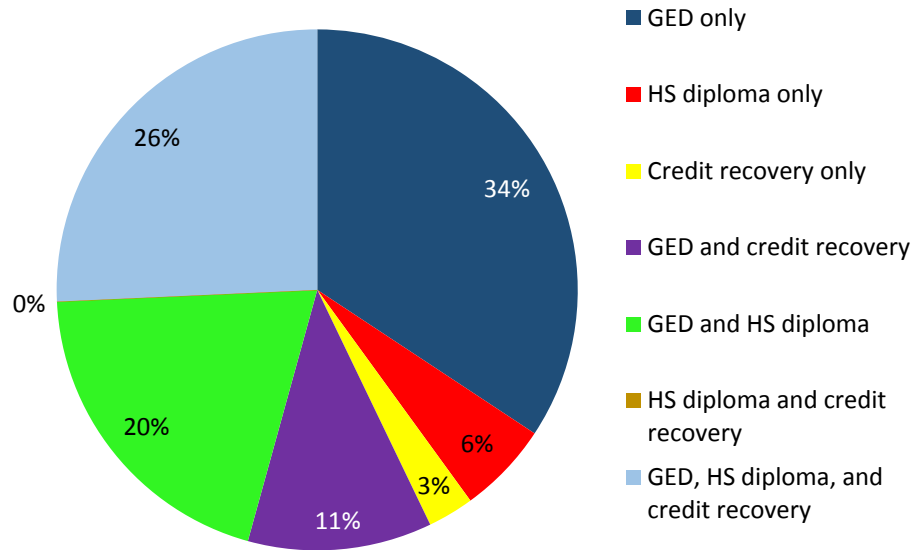
The corresponding distribution of teachers for the ChalleNGe population as a whole is presented in Figure 3. The two program types in which our survey distribution differs most from the distribution of all ChalleNGe teachers are shown in green (GED and HS diploma) and light blue (GED, HS diploma, and credit recovery); even in these cases, the differences are not great. In the ChalleNGe program, teachers in GED and HS diploma (green) programs make up 20 percent of all teachers, versus 17 percent of our sample; those who teach in GED, HS-diploma, and credit-recovery (light blue) programs make up 26 percent of all ChalleNGe teachers, versus 31 percent of our teachers. Thus, we are somewhat overrepresented in the latter category and somewhat underrepresented in the former. Given that the differences are only 3 and 5 percentage points, we do not expect that this will introduce any bias into our results.

Figure 2. Distribution of teachers' program types (GED granting, HS-diploma granting, credit recovery)



Source: CNA tabulations of teacher survey data.

Figure 3. Program-wide distribution of teachers, by program type

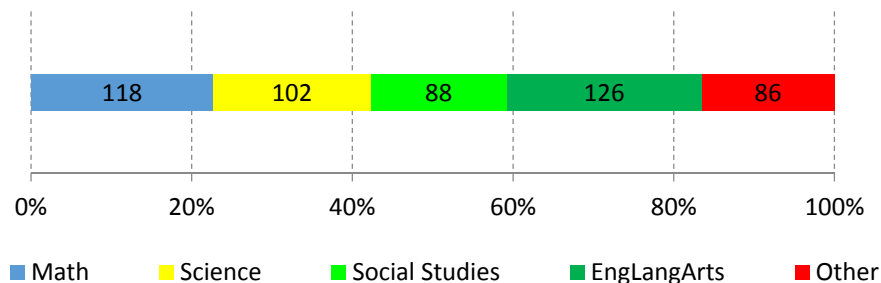


Source: CNA tabulations of annual report data.

## Subjects currently taught

Figure 4 and Table 1 provide information on the subjects our survey participants teach at ChalleNGe, both nationally and at the program level. As Figure 4 shows, 126 of the 191 teachers we surveyed indicated that they teach English/language arts, followed in frequency by math, science, social studies, and “other.”

Figure 4. Distribution of subjects taught (all ChalleNGe programs)<sup>a</sup>



Source: CNA tabulations of teacher survey data.

<sup>a</sup>. The numbers within the bar sum to more than 191 (the total number of teachers surveyed) because many ChalleNGe teachers teach more than one subject.

Table 1 illustrates the same information at the program level. Although most programs largely follow this pattern, some differences exist across the programs.

Table 1 Distribution of subjects currently taught, by ChalleNGe program

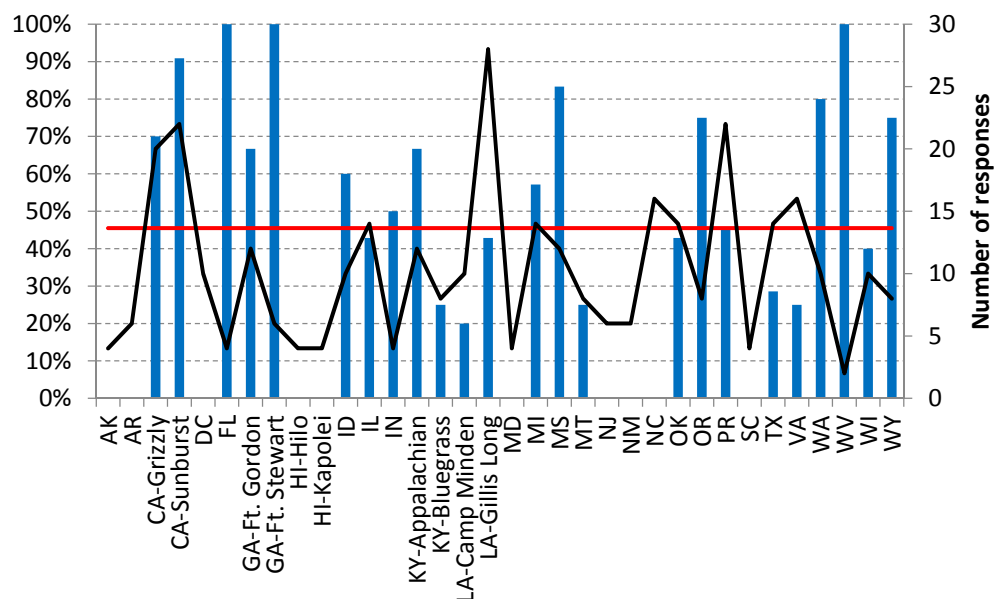
Program	Math	Science	Social Studies	English/ Language Arts	Other
AK	4	4	4	4	4
AR	2	--	2	2	--
CA-Grizzly	6	4	4	10	8
CA-Sunburst	4	4	4	6	--
DC	4	4	--	2	--
FL	--	--	--	2	2
GA-Fort Gordon	4	4	2	4	--
GA-Fort Stewart	4	4	6	6	2
HI-Hilo	4	--	--	2	--
HI-Kapolei	--	--	--	--	6
ID	2	2	--	2	4
IL	4	10	8	8	4
IN	--	--	--	2	2
KY-Appalachian	6	6	6	6	2
KY-Bluegrass	4	4	4	4	2
LA-Camp Minden	6	6	6	6	6
LA-Gillis Long	16	8	8	14	8
MD	--	--	2	2	--
MI	2	2	2	2	2
MS	8	8	6	6	--
MT	--	2	2	2	--
NC	2	2	2	2	4
NJ	--	2	2	2	--
NM	4	4	2	2	--
OK	2	--	4	4	6
OR	10	4	--	8	6
PR	2	4	2	2	12
SC	2	2	--	--	--
TX	6	2	2	4	2
VA	4	4	4	4	2
WA	2	2	--	--	--
WI	2	2	2	2	
WV	--	--	--	--	2
WY	2	2	2	2	--

Source: CNA tabulations of teacher survey data.

## Educational qualifications

Teachers' educational backgrounds vary significantly across programs, as shown in Figure 5. The survey asked teachers what credentials or degrees they held. Using the highest degree or credential reported by each teacher, we found that 124 Challenge teachers have bachelor's degrees, 72 have master's degrees, 15 are "education specialists" (requiring additional coursework beyond a master's), 2 have doctorates in education, and 3 indicated that they have "other professional degrees." Due to the predominance of bachelor's and master's degrees, we decided to separate the teachers into two categories: those having "more than a bachelor's" (45 percent of our entire sample, most of whom hold a master's degree) and those with a "bachelor's degree."

Figure 5. Percentage of teachers holding more than a bachelor's degree, by Challenge program<sup>a,b</sup>



Source: CNA tabulations of teacher survey data.

<sup>a</sup>. The red line in the figure represents the sample average. The black line corresponds to the secondary vertical axis and represents the number of responses included in each blue bar's percentage calculation.

<sup>b</sup>. For the programs with no blue bar, no teachers indicated that they held more than a bachelor's degree (including those who did not reply to this question).

There is significant variation in the prevalence of teachers holding more than a bachelor's degree across programs. In fact, 10 of the 34 programs for which we have survey data have no teachers with education beyond a bachelor's degree. An

additional 10 programs have a smaller percentage of teachers with bachelor's degrees on their staff than the ChalleNGe national average. The remaining 14 programs are above average in this measure, the most notable being Florida, Georgia-Fort Stewart, and West Virginia: 100 percent of their teachers in our survey population have more than a bachelor's degree.

## Other qualification measures

The last three “qualification” measures we compare across programs are the teachers’ average years of experience (overall and at ChalleNGe) and the percentage of teachers holding a teaching certificate. Figure 6 and Figure 7 display the two measures of teaching experience. The average years of teaching experience for the entire sample, as shown by the red line in Figure 6, is 14. As the figure illustrates, teachers in a handful of programs average more than 20 years of experience (Florida, Louisiana-Gillis Long, New Mexico, and West Virginia); these programs are increasing the sample average. This variation likely exists because teachers arrive at ChalleNGe at different stages of their careers: some will likely retire after leaving ChalleNGe, and others teach at ChalleNGe at the beginning of their careers. There is noticeably less variation across programs in the teachers’ average years teaching ChalleNGe, as shown in Figure 7 (note that the y-axis scales are different in the two figures). The programs that stand out in that figure are Alaska, with an average ChalleNGe-specific experience of 12 years, as well as those whose teachers on average have fewer than 2 years of ChalleNGe experience: Hawaii-Kapolei, Idaho, Kentucky-Appalachian, and West Virginia.

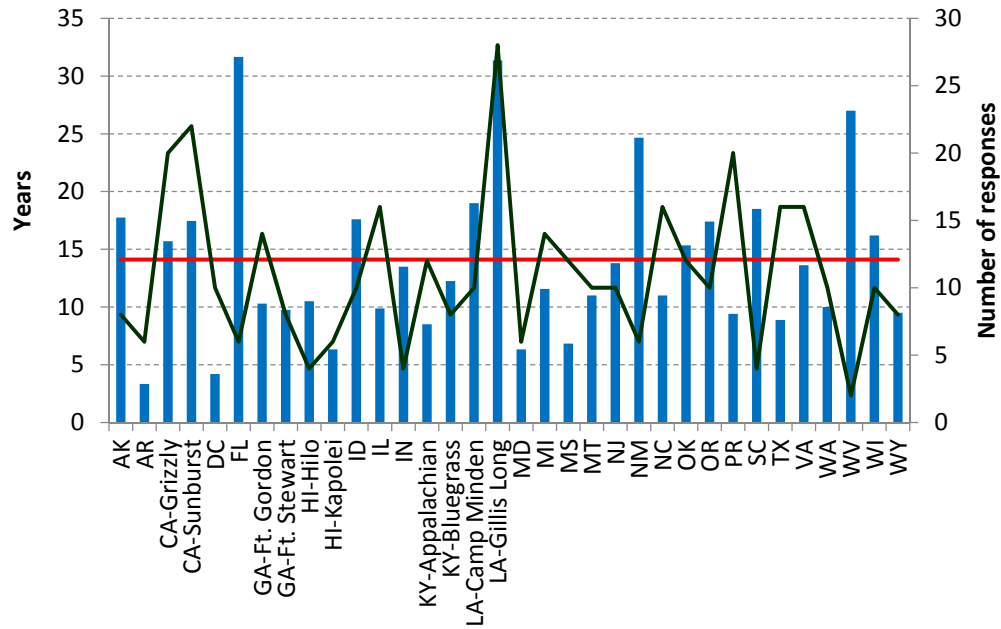
As shown in Figure 8, the percentage of teachers holding teaching certificates is high, both across the sample as a whole and within *most* ChalleNGe programs. The national average for survey respondents (shown by the red line) is 78 percent, and the program-specific average is 100 percent for 18 of the 34 programs whose teachers participated. Those with particularly low teacher certification rates include the District of Columbia (at 20 percent), both of the Georgia programs (at 33 percent), and Maryland (at 33 percent). Four programs’ survey responses indicated a 0-percent teacher certification rate: Alaska, Hawaii-Kapolei, Kentucky-Bluegrass, and New Mexico.<sup>11</sup> It is not necessarily the case that teachers without teaching certificates do not meet their states’ teaching requirements, as they may still have teaching *licenses*. It is clear from Figure 8 that at least some survey respondents differentiated between licenses and certificates.

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<sup>11</sup> It is important to note that the statistics reported here and throughout this report are based on survey respondents only. In this case, if any certified teachers did not respond to our survey or responded but did not answer the question on qualifications, our estimates of teacher certification rates will be lower than the true rates.



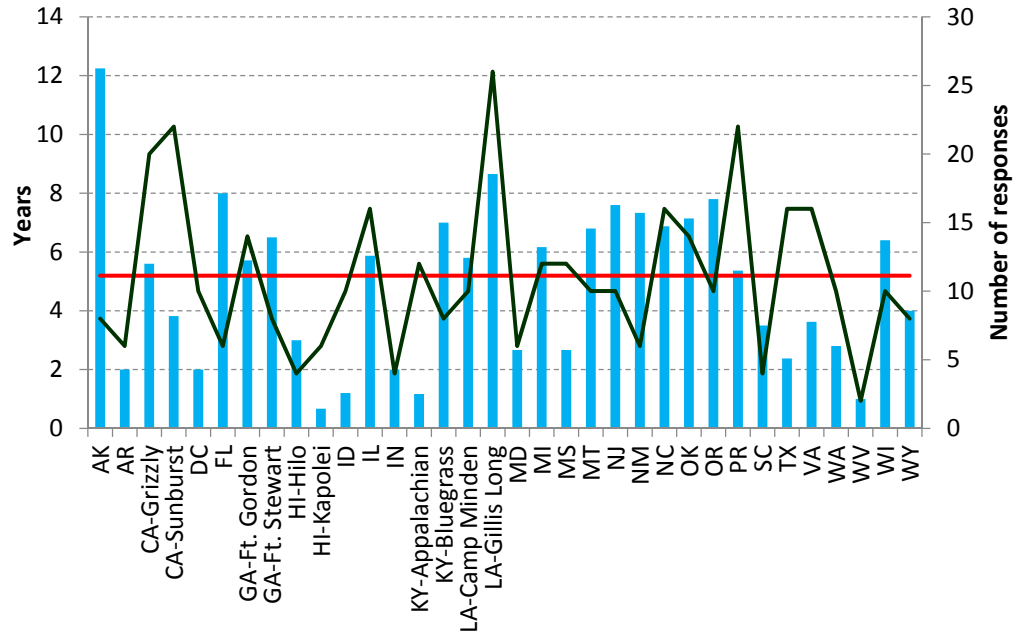
Figure 6. Average years of teaching experience, by ChalleNGe program<sup>a</sup>



Source: CNA tabulations of teacher survey data.

<sup>a</sup>. The red line in the figure represents the sample average. The black line corresponds to the secondary vertical axis and represents the number of responses included in each bar's calculation.

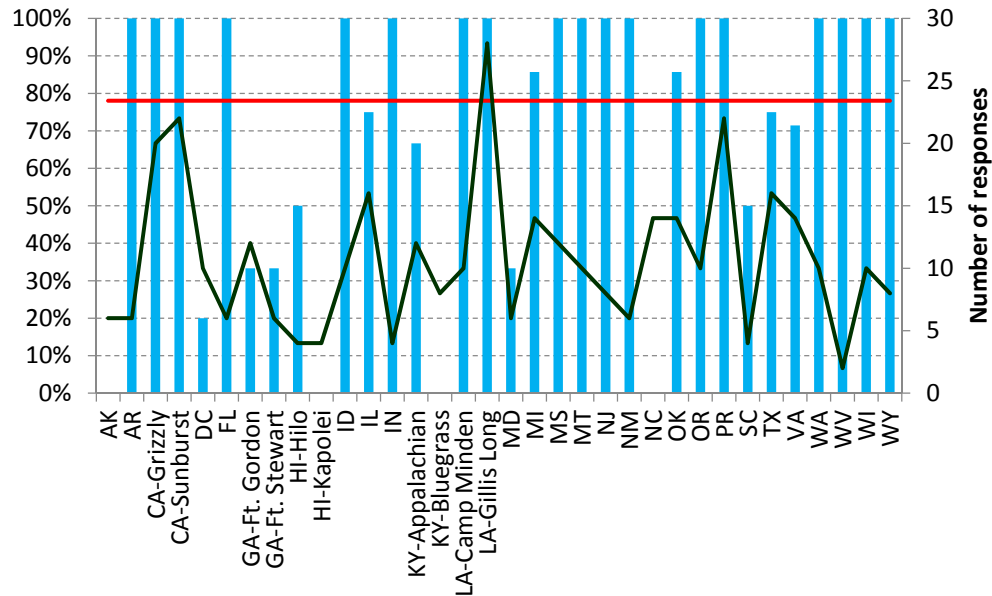
Figure 7. Average years of ChalleNGe teaching experience, by ChalleNGe program<sup>a</sup>



Source: CNA tabulations of teacher survey data.

<sup>a</sup>. The red line in the figure represents the sample average. The black line corresponds to the secondary vertical axis and represents the number of responses included in each bar's calculation.

Figure 8. Percentage of teachers with a teaching certificate, by Challenge program<sup>a,b</sup>



Source: CNA tabulations of teacher survey data.

<sup>a</sup>. The red line in the figure represents the sample average. The black line corresponds to the secondary vertical axis and represents the number of responses included in each bar's calculation.

<sup>b</sup>. Programs with no blue bar had no teachers with a teaching certificate among their survey respondents.

Having characterized our survey population in terms of response rates, program type, subjects taught, and basic teacher qualifications, we now turn to regression analysis of how differences in teacher qualifications affect cadets' outcomes. The following sections address pedagogical differences and teachers' best practices.

## Teachers' Qualifications

In this section, we investigate whether a program's average teacher qualifications are correlated with its graduation rate, TABE score improvements, and postresidential placement rates. In addition to the measures of teachers' qualifications introduced in the previous section (highest degree held, years of teaching experience, and teaching certification), we also consider the importance of teachers' majors and coursework—specifically, if the teaching staff majored or took coursework in the subject(s) they teach at ChalleNGe.

Table 2 presents the distribution of college (or postgraduate) “majors” by the subject taught at ChalleNGe. The percentages should be read by columns (not across rows). Among teachers who teach science at ChalleNGe, for example, the percentages in that column indicate that 38 percent of those teachers majored in science, 40 percent majored in education, 15 percent majored in the social sciences, and 10 percent majored in social studies. We include education and social sciences among our list of majors, in part due to their high prevalence, even though these are not subjects explicitly taught at ChalleNGe. Cadets do not, for example, take classes in economics, sociology, or any other social sciences, nor do they take classes in education. Later in this section, when we measure the percentage of teachers, by program, who majored in the subject matter they teach at ChalleNGe, those with majors in social sciences or education will be counted among those who did *not* major in what they teach at ChalleNGe.

A few patterns in this table are worth noting. The most common major, regardless of the subject taught at ChalleNGe, is education. We suspect that this is preferable—in terms of leading to better outcomes for students—to mastery of the subject matter taught. Specifically, we expect that understanding how to connect with students and effectively vary pedagogical methods—especially given the ChalleNGe population—is more important in realizing positive cadet outcomes than a teacher's subject-specific knowledge base. We will test this later in this section, when we use teacher qualifications as predictors of cadets' outcome measures. Among science, English/language arts, and social studies teachers, the second most common major is the subject they teach. This is not the case, however, for math teachers. In fact, math is among the least common majors for math teachers. Given the level of math being taught in these classrooms, this is likely not a cause for concern.

Table 2. ChalleNGe teachers' majors, by subject taught<sup>a</sup>

Major	<u>For ChalleNGe teachers who teach:</u>				
	Math	Science	English/ Language Arts	Social Studies	Other
Math	9%	4%	0%	0%	0%
Science	13%	38%	5%	4%	14%
English/Language Arts	4%	4%	25%	12%	3%
Social Studies	13%	10%	14%	24%	14%
Social Sciences	13%	15%	11%	17%	9%
Art	7%	4%	4%	5%	14%
Education	51%	40%	48%	44%	69%
Other	5%	4%	5%	2%	0%
Observations	55	48	56	41	35

Source: CNA tabulations of teacher survey data.

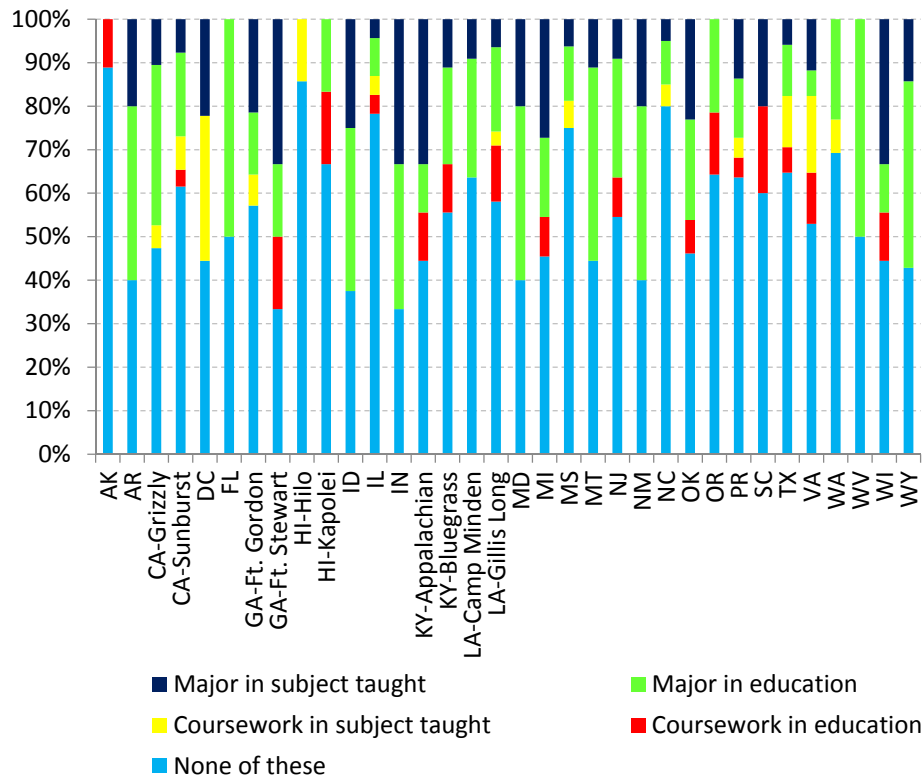
<sup>a</sup> The column percentages do not add to 100 because many teachers have more than one major. That is, the majors in this table are not mutually exclusive.

Having synthesized the prevalence of different major types across ChalleNGe teachers, by subject taught, for the sample as a whole, we now turn to an analysis of how teachers' qualifications in terms of their majors (and coursework) vary across programs. We present the distribution of five "qualification categories" in Figure 9. We have created these variables to be mutually exclusive in the order of relevance to what they currently teach. Thus, we begin by creating a variable that takes a value of 1 if teachers majored in the subject they teach at ChalleNGe, and 0 otherwise. We then create a variable that indicates the number of teachers per program who majored in education, but this includes only those teachers who did *not* major in what they teach at ChalleNGe. The third variable captures the number of teachers with coursework in the subject they teach at ChalleNGe (given that they majored neither in this subject nor in education), and the fourth captures the number with coursework in education (given that the three previous measures were false). Finally, the fifth variable captures the number of teachers per program who meet none of these qualifications.

These percentages are illustrated in Figure 9 and are program-specific. That is, they illustrate the percentages of teachers, within a program, who fall into each of the five categories. The five categories are mutually exclusive in the following order: major in subject taught, major in education, coursework in subject taught, coursework in education, and none of the above. The "major in education" variable, for example, takes a value of 1 only for teachers who majored in education but did not major in the subject they teach at ChalleNGe. As Figure 9 illustrates, teacher qualification by major varies significantly across the ChalleNGe programs. The programs with the most qualified teachers (by these measures) are Georgia-Fort Stewart, Indiana, and Idaho—the only three programs where less than 40 percent of the teachers meet

none of the major or coursework qualifications. At the other extreme are Alaska and Hawaii-Hilo, with 89 and 86 percent of teachers, respectively, meeting none of these qualifications. We find it particularly striking that at *all* programs, at least 30 percent of the teachers participating in our survey meet *none* of the qualifications displayed in Figure 9; this percentage seems high given that the lowest level of qualification we use is only having taken coursework in education (a low standard to meet).

Figure 9. ChalleNGe teachers' majors and coursework (and their relevance to what they teach), by ChalleNGe program



Source: CNA tabulations of teacher survey data.

In the remainder of this section, we evaluate whether the programs' average teacher qualification rates (by various measures) are correlated with the programs' average cadet outcomes. We consider five cadet outcome variables: program graduation rate, TABE improvement (pre to post), 1-month placement rate, 6-month placement rate, and 12-month placement rate. We determine whether each outcome is correlated with the programs' average teacher experience (both overall and ChalleNGe-specific), the percentage of teachers holding a teaching certificate, the percentage with more than a bachelor's degree, and the percentage whose majors are relevant to what they teach (either because they're teaching the subject in which they majored or because

they majored in education). The relationships between all these teacher characteristics with our outcome variables of interest are displayed in Table 3.

Table 3. Marginal changes in average cadet outcomes associated with changes in average teacher qualifications<sup>a,b</sup>

	Program graduation rate	TABE improvement	Placement rate		
			1-month	6-month	12-month
Average teachers' experience (in years)	Insig.	-0.04*	Insig.	Insig.	Insig.
Average teachers' ChalleNGe experience (in years)	Insig.	Insig.	Insig.	Insig.	Insig.
Percentage with teaching certificate	Insig.	Insig.	Insig.	Insig.	Insig.
Percentage with more than a bachelor's degree	Insig.	0.88*	0.32**	0.27**	0.22*
Percentage that majored in what they teach	Insig.	-1.52**	Insig.	Insig.	Insig.
Percentage that majored in education	Insig.	Insig.	Insig.	Insig.	Insig.
Number of observations	34	34	33	33	33

Source: CNA estimations using teacher survey data.

<sup>a</sup>. The marginal changes displayed in this table represent the change in cadets' average graduation rates, TABE improvement, and postresidential placement rates that are associated with a one-unit increase in the teacher qualifications (either an increase of 1 year in experience or a 1-percentage-point increase in the other variables).

<sup>b</sup>. "Insig." indicates that the relationship between that teacher qualification and the outcome variable of interest is statistically insignificant.

\* Indicates that the relationship is statistically significant at the 10-percent level. That is, the result would occur by chance fewer than 10 times in 100.

\*\* Indicates that the relationship is statistically significant at the 5-percent level.

A few noteworthy findings emerge from the findings. First, none of the teacher qualification variables is a significant predictor of program graduation rates. It is important to recall that these are program-level, *average* regressions and that individual cadets are not being matched to specific teachers. We suspect that more statistically significant relationships would emerge if we were able to match cadets and teachers in this way. Second, the percentage of teachers at a program with more than a bachelor's degree has a significant relationship with four of our five outcome measures (all but graduation rate). This suggests that a greater prevalence of more highly educated teachers has positive impacts on overall cadet performance. These relationships are also sizable—a 1-percentage-point increase in the percentage of a program's teachers who hold more than a bachelor's degree is associated with a 32-percent increase in the 1-month placement rate, a 27-percent increase in the 6-month placement rate, a 22-percent increase in the 12-month placement rate, and an

increase of 0.86 in the average TABE improvement.<sup>12</sup> Finally, we also find that teachers' average teaching experience is negatively related to the cadets' average TABE improvement, as is the percentage who majored in what they teach. This may indicate that older teachers (who have more years of teaching experience) and those with degrees in what they teach are either less focused on TABE improvement or are less familiar with the methods that most effectively improve cadets' TABE performance. But, again, these suppositions cannot be confirmed without individual-level teacher and cadet data.

Overall, we have found that few of the teacher-qualification characteristics (in the aggregate) have significant relationships with cadets' average outcomes. The average ChalleNGe teaching experience among a program's staff has no significant impact on that program's average cadet outcomes, and nor does the percentage of teachers who majored in the subject they teach at ChalleNGe. The percentage of a program's teachers who majored in education and the teachers' average overall teaching experience were significantly related only to TABE improvement—and negatively so. Our results suggest that the most important teacher qualification is the percentage of teachers who have attained more than a bachelor's degree. This was positively and significantly associated with all cadet outcomes, except the average program graduation rate, which we do not find to be significantly associated with *any* of our measures of teachers' qualifications. These results suggest that programs (and thereby cadets) might well gain from an increased percentage of teachers with graduate degrees. We recommend, however, that individual-level analysis linking cadets to teachers be conducted before any policy implications are drawn from this report.

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<sup>12</sup> Given that the range of TABE improvements for our sample (by class average) is from 0.1 to 4.3, an increase of 0.88 represents 20 percent of the total 4.3 point range.



## Pedagogy

In this section, we review teachers' inputs regarding their pedagogical approaches and investigate whether any program-level differences are correlated with program-level outcomes for cadets (e.g., program graduation rate, TABE score changes). We first present our analysis of the more general pedagogical questions—asked of all teachers—and have grouped these into three categories: how cadets are assigned both to classes and to groups within classes; how teachers use their instructional time; and overall pedagogical methods. We then review teachers' responses to subject-specific survey questions, asked only of teachers of math or English/language arts. Since competency exams (such as the GED) focus on these subject areas, we found it pertinent to gather additional information on these teachers' pedagogical approaches.

### Cadet class assignments

We asked teachers how cadets at their program are assigned to specific classes, and provided the options of ability or previous achievement, age, gender, and "other." A sufficient number of teachers selected "other," explaining that students were assigned to classes by platoon or alphabetically, that we coded these as separate categories. Table 4 displays the distribution of responses we received, by ChalleNGe program. Across the sample as a whole, 57 percent of teachers indicated that cadets are assigned to specific classes based on ability or previous performance, 17 percent based on gender, 3 percent based on age, 5 percent alphabetically, 9 percent by platoon, and 11 percent said "other".<sup>13</sup> These numbers sum to more than 100 because teachers were asked to check all that apply. These general trends are largely mirrored in Table 4, where the largest concentration of responses is in the "ability" column, followed by gender, other, platoon, age, and alphabetical. At a number of programs, 100 percent of participating teachers indicated that assignments are made based on ability, and in a few cases 0 percent chose ability (these programs include Georgia-Fort Gordon, Illinois, Mississippi, New Mexico, Washington, Wisconsin, and Wyoming). Other noticeable outliers include programs assigning cadets to classes alphabetically, such as Michigan, Puerto Rico, and Wyoming.

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<sup>13</sup> We note that the sample average of 17 percent for gender-based class assignments is inconsistent with anecdotal evidence (from discussions) with a number of program directors. That is, directors indicated that class assignments are made primarily based on gender, since mixed-gender classes were too disruptive. The fact that only 17 percent of teachers indicated that class assignments are gender-based at their programs suggests that they may not have understood the nature of this question.

Table 4. Distribution of class assignment methods, by ChalleNGe program

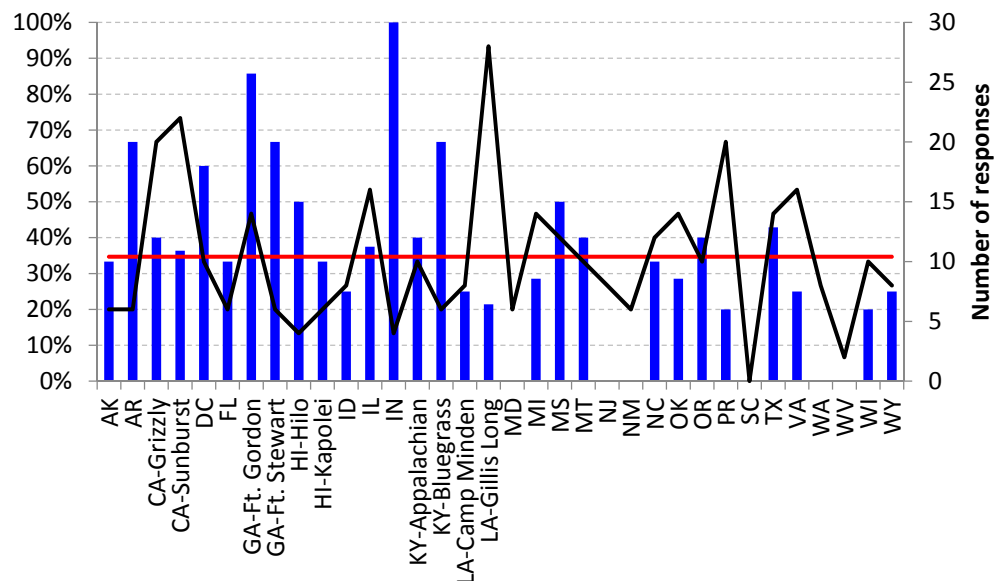
Program	Ability	Gender	Age	Alphabetical	Platoon	Other
AK	75%	0%	0%	0%	0%	25%
AR	100%	0%	0%	0%	0%	0%
CA-Grizzly	100%	0%	0%	0%	0%	0%
CA-Sunburst	91%	9%	0%	0%	0%	0%
DC	80%	20%	0%	0%	0%	0%
FL	67%	0%	0%	0%	0%	33%
GA-Fort Gordon	0%	57%	0%	0%	29%	29%
GA-Fort Stewart	33%	0%	33%	0%	0%	33%
HI-Hilo	50%	50%	0%	0%	0%	0%
HI-Kapolei	33%	67%	0%	0%	0%	0%
ID	100%	0%	0%	0%	0%	0%
IL	0%	13%	0%	0%	75%	13%
IN	100%	0%	0%	0%	0%	0%
KY-Appalachian	50%	33%	0%	0%	17%	0%
KY-Bluegrass	100%	0%	0%	0%	0%	0%
LA-Camp Minden	80%	0%	0%	0%	20%	20%
LA-Gillis Long	85%	0%	0%	0%	0%	15%
MD	33%	67%	0%	0%	0%	0%
MI	33%	50%	0%	17%	0%	17%
MS	0%	67%	17%	0%	17%	0%
MT	100%	0%	0%	0%	0%	0%
NJ	50%	50%	0%	0%	0%	0%
NM	0%	50%	0%	0%	0%	50%
NC	38%	25%	0%	0%	25%	13%
OK	100%	0%	0%	0%	0%	0%
OR	100%	0%	0%	0%	0%	0%
PR	11%	0%	22%	56%	0%	11%
SC	100%	0%	0%	0%	0%	0%
TX	63%	0%	13%	0%	0%	25%
VA	71%	0%	0%	0%	0%	29%
WA	0%	25%	25%	0%	25%	25%
WV	100%	0%	0%	0%	0%	0%
WI	0%	60%	0%	0%	60%	0%
WY	0%	25%	0%	75%	0%	25%
Sample average	57%	17%	3%	5%	9%	11%

Source: CNA tabulations of teacher survey data.

To determine whether cadets were advantaged or disadvantaged by the class-assignment mechanisms used at their programs, we investigated whether class-assignment methods correlate significantly with our program-level outcome variables. We expected, in particular, that those assigned by ability might have better overall outcomes than those assigned to classes by other methods. We did not, however, find any significant relationship between any class-assignment method and cadets' average outcomes. It is important to recall that this may be due to insufficient power and minimal variation in our dataset. Specifically, we are working with only 33 observations and average outcome data; therefore, we cannot correlate the outcomes of students *within* a program who may have been assigned to classes in different ways with their individual-level outcomes. We would be able to more accurately answer this empirical question, along with the others in this section, if we were working with individual-level (instead of program-level) data.

Our survey also asked if teachers create groups *within* their classes based on ability or previous achievement. The majority of teachers at most programs indicated that they do *not* create such groups. In fact, in only six programs did the majority of teachers indicate that they do create ability-based groups within their classroom: Arkansas, District of Columbia, Georgia-Fort Gordon, Georgia-Fort Stewart, Indiana, and Kentucky-Bluegrass (see Figure 10). Once again, we found no significant correlation between the percentage of teachers at a program who create groups based on ability and the average outcomes of cadets. As previously mentioned, this may be because of the insufficient variation and power in our data, but it also may be because those who indicated that they *do* create groups by ability do so in different ways (perhaps some grouping those of similar ability and others intentionally mixing ability levels within groups). If this is the case, overall effects may be averaged out.

Figure 10. Percentage of teachers who create class groups based on ability, by Challenge program<sup>a,b</sup>



Source: CNA tabulations of teacher survey data.

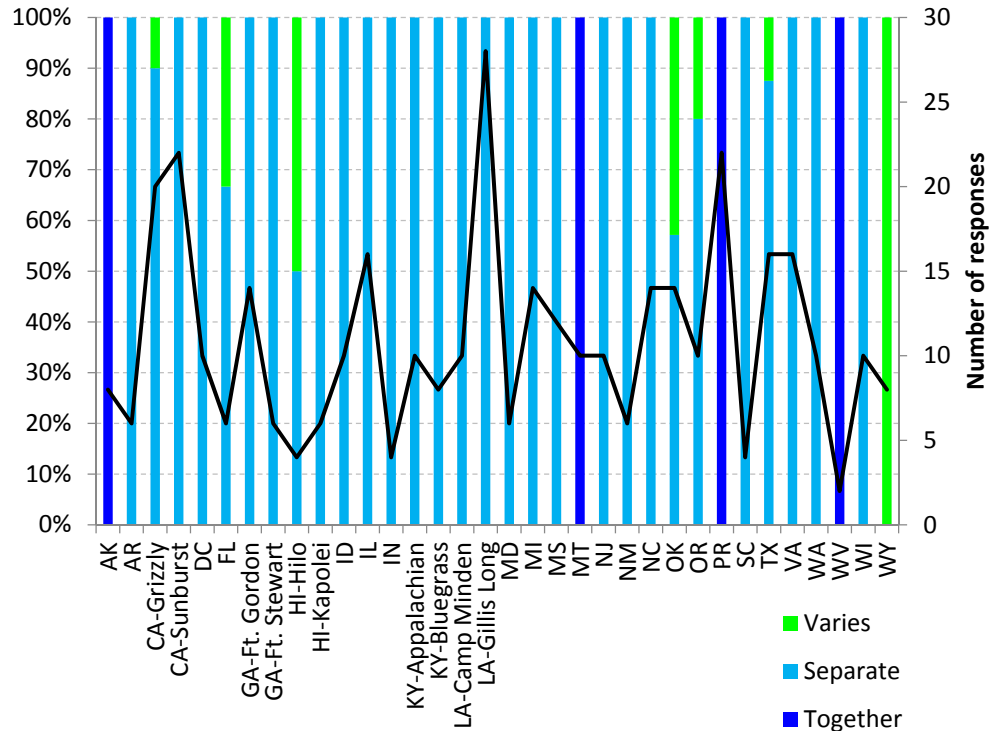
<sup>a</sup>. Teachers at programs with no visible bar indicated that they do *not* create groups based on ability, with the exception of South Carolina. In that case, no teachers answered this question; thus, the missing bar should be interpreted as missing data, not as a “true zero.”

<sup>b</sup>. The red line in the figure represents the sample average. The black line corresponds to the secondary vertical axis and represents the number of responses included in each bar’s calculation.

The final type of cadet assignment we consider is whether male and female cadets take classes together or separately. In the overall sample, 11 percent of teachers indicated that male and female cadets take their class together, 82 percent indicated that they are separate, and 6 percent said it varies. The program-specific averages for these variables are presented in Figure 11. Not surprisingly, 100 percent of teachers at most programs indicated that male and female cadets take their classes separately since this is likely a program-level policy in most cases (with little variation across classes within a program). Four programs stand out for having mixed-gender classes among 100 percent of their survey respondents: Alaska, Montana, Puerto Rico, and West Virginia. In terms of correlation between mixed- or separate-gender classes and outcomes, we find significance only for the 12-month placement rate. Specifically, we find that programs where the teachers reported that male and female cadets are always separate or always together have higher 12-month placement rates than those reporting that it varies. This suggests that gender consistency in classroom composition is what is most important for these cadets (whatever the policy). Perhaps, for example, cadets who move between mixed-gender and gender-divided classes are distracted by the change in classroom environment, or perhaps

mixed-gender classes are more distracting than single-gender ones. Such suppositions cannot be confirmed without more detailed analysis, especially since we found a significant correlation only with the 12-month placement rate and not with the other placement rates, the program graduation rate, or the TABE improvement.

Figure 11. Percentage of teachers who indicated that male and female cadets take their class together, separately, or both, by ChalleNGe program<sup>a</sup>



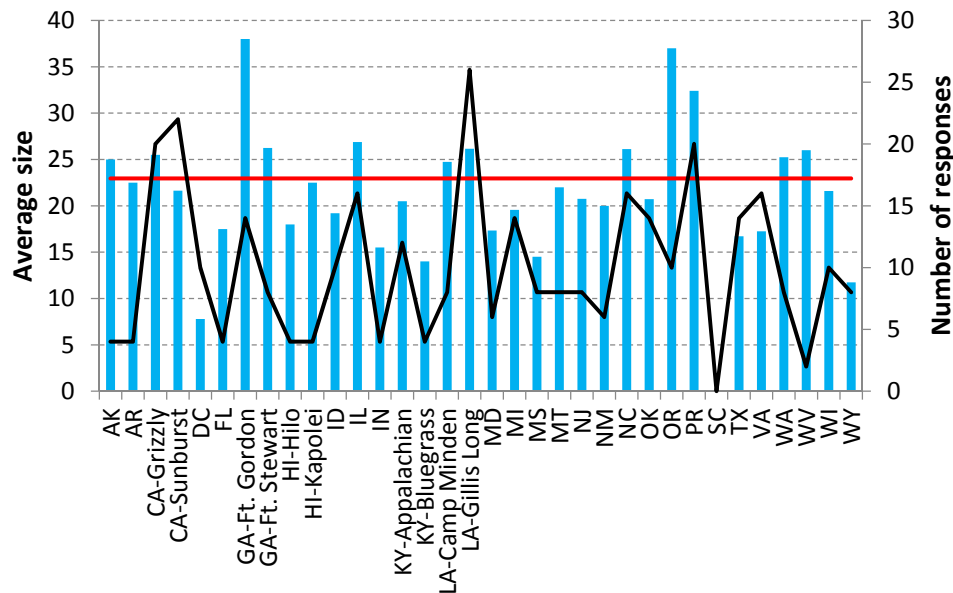
Source: CNA tabulations of teacher survey data.

<sup>a</sup> The black line in the figure corresponds to the secondary vertical axis and represents the number of responses included in each bar's calculation.

The final characteristic we consider in this subsection, because it is likely at least partially determined by class-assignment practices, is average class size. The average class size reported by teachers in the entire sample, as illustrated by the red line in Figure 12, is 23 cadets. Georgia-Fort Gordon, Oregon, and Puerto Rico stand out as having average class sizes much larger than the average (all above 30 cadets), whereas the District of Columbia, Wyoming, Kentucky-Bluegrass, and Mississippi all have noticeably smaller average class sizes (all less than 15). Since class size is likely directly related to the amount of individual attention teachers can provide their students, we expected to find statistically significant negative correlations between class size and average student outcomes. None of our outcome variables, however, is statistically significantly related to average class size. Once again, we cannot

determine whether this is because class size has no impact on cadets' performance and the overall value of ChalleNGe for them, or if our average, program-level data have insufficient variation to capture this relationship.

Figure 12. Teachers' average class size, by ChalleNGe program<sup>a,b</sup>



Source: CNA tabulations of teacher survey data.

<sup>a</sup>. The South Carolina teachers who completed the survey did not provide this information.

<sup>b</sup>. The red line in the figure represents the sample average. The black line corresponds to the secondary vertical axis and represents the number of responses included in each bar's calculation.

## Division of teachers' instructional time

We asked teachers how they divide their instructional time. In this subsection, we analyze three measures of teachers' time: (1) the amount of time teachers spend, per week, teaching the whole class, small groups, or a single student; (2) hours spent tutoring per week; and (3) the number of hours spent on administrative and disciplinary tasks (which we might consider "nonproductive" hours for the purposes of cadets' academic progress).<sup>14</sup> We are interested not only in how these measures

<sup>14</sup> There is potential for error in teachers' responses here (and in response to any other questions regarding how they divide their instructional time). This is because teachers were not asked, prior to the survey, to keep track of their time, but rather were responding to these questions based on their best recollections about time that had already passed. That said, since

vary across programs, but also in whether they have any significant relationships with programs' average cadet-level outcomes. Figure 13 presents teachers' average number of hours spent per week on whole-class, small-group, and single-student instruction, by program. The survey question imposed a maximum on the value these variables can take. Teachers' time choices for each activity were none, <1 hour, 1 hour, 2 hours, 3 hours, 4 hours, and 5+ hours. There were a total of seven time-spent categories, which we aggregated into whole-class, small-group, and single-student instruction.<sup>15</sup> We recoded this variable to take values of 0 through 5, with <1 hour and 1 hour both being recoded as 1. Thus, the maximum possible value for any bar in Figure 13 is 35 (i.e., the sum of hours spent on the three aggregated activity categories, or the seven separate activities).<sup>16</sup> In most cases, teachers spend the most time instructing the class as a whole, followed by small groups, and then instructing individual students. Although the amount of time spent on these different types of instruction has no significant correlation with either cadets' average program graduation rates or TABE score improvements, we do find one significant relationship with a postresidential outcome. Specifically, our OLS regression results indicate that programs' average 1-month placement rates are statistically significantly negatively correlated with the number of hours spent instructing the class as a whole.<sup>17</sup> This suggests that students benefit, in the long run, from more one-on-one instruction and less large-group instruction.

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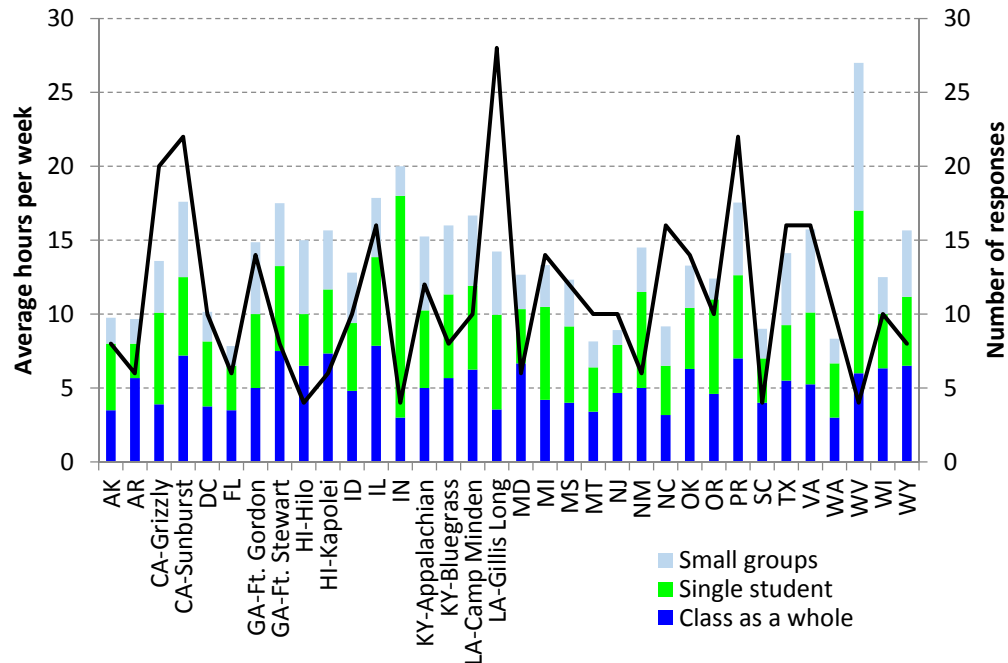
teachers typically plan their instructional time in advance, we expect them to have more accurate time-use responses than might be true of the general population.

<sup>15</sup> Specifically, whole-class instruction includes all hours spent "instructing the class as a whole" and "discussing issues as a class." Small-group instruction includes hours spent "instructing small groups of students" and "assisting students as they work in groups." Finally, single-student instruction includes "instructing single students," "assisting students as they work independently," and "assisting students as they work on homework."

<sup>16</sup> Not all teachers' time with students can necessarily be classified as one of our seven subcategories. In addition, teachers may classify some instructional time as something other than the categories we provided. Thus, some of the exceptionally low numbers displayed in Figure 13 may not actually reflect the average hours spent instructing students at those programs, but may rather reflect only the average hours spent on a *portion* of instruction time.

<sup>17</sup> The relationship with the 12-month placement rate is significant only at the 20-percent level, which is outside the typically reported range of statistical significance.

Figure 13. Average hours spent per week instructing the class as a whole, small groups of students, and single students, by ChalleNGe program<sup>a</sup>



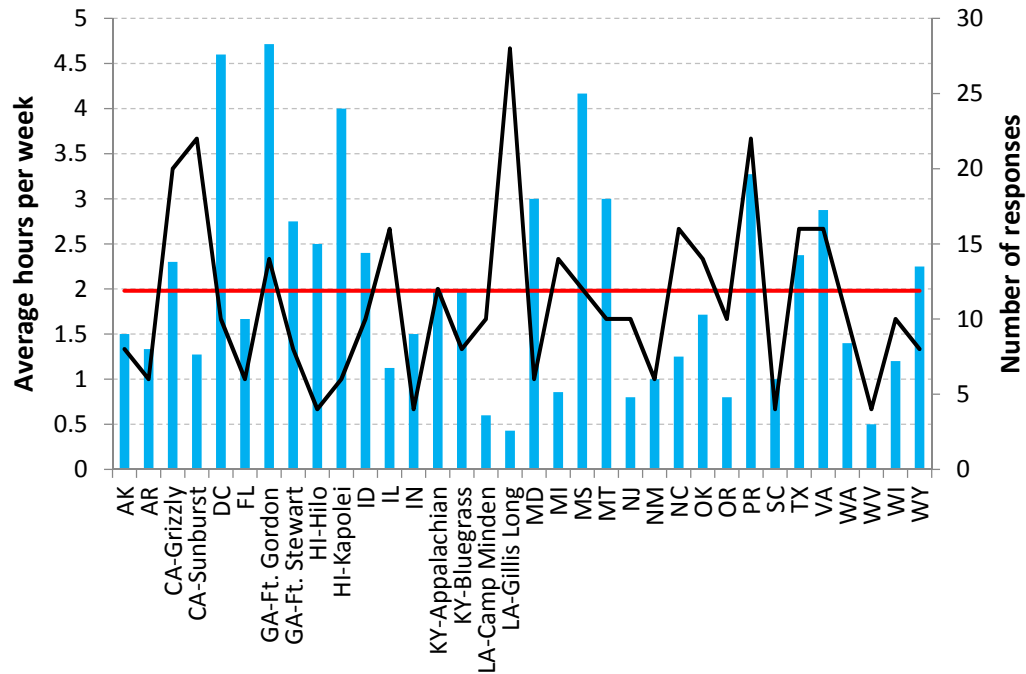
Source: CNA tabulations of teacher survey data.

<sup>a</sup> The black line in the figure corresponds to the secondary vertical axis and represents the number of responses included in each bar's calculation.

Figure 14 displays the average number of hours spent per week tutoring or working with students outside class, by ChalleNGe program. The sample average, shown by the red line, is 2 hours per week, and there is significant variation around that average—with program averages ranging from under 0.5 hour to over 4.5 hours. Although we expected that programs with higher average tutoring hours would have higher average cadet outcomes, we find no statistically significant relationship for any of our outcome measures.



Figure 14. Average number of hours spent tutoring per week, by ChalleNGe program<sup>a</sup>

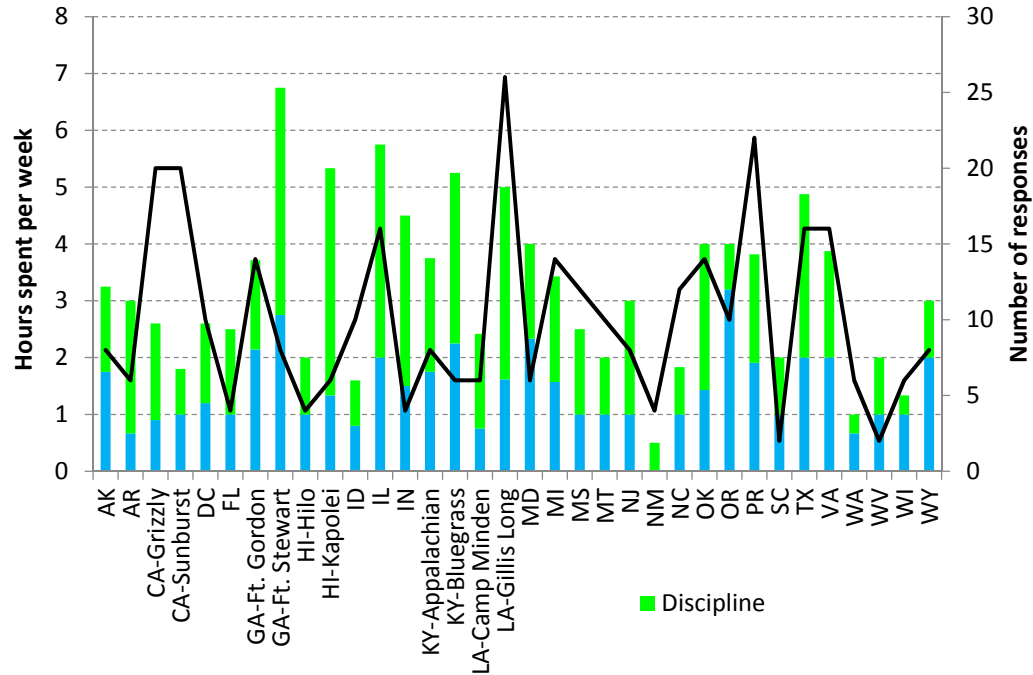


Source: CNA tabulations of teacher survey data.

<sup>a</sup> The red line represents the sample average. The black line corresponds to the secondary vertical axis and represents the number of responses included in each bar's calculation.

Our final measure of how teachers spend their time is the number of hours per week spent on administrative or disciplinary tasks. These program-specific averages are displayed in Figure 15. The sample averages (not shown) are 1.5 for administrative tasks and 1.9 for disciplinary tasks (for a total of 3.4 so-called nonproductive hours per week, on average). In a number of programs, as shown, teachers' average total nonproductive hours far exceed this, including Georgia-Fort Stewart, Illinois, Hawaii-Kapolei, and Kentucky-Bluegrass, all of which have an average of 5 nonproductive hours per week or more. At the other extreme are Washington, Wisconsin, Idaho, California-Sunburst, New Mexico, and North Carolina, all of whose teachers have less than 2 nonproductive hours per week. This variation led us to suspect a potential negative impact of nonproductive hours on cadets' average outcome measures, since any additional hours that teachers must devote to administrative tasks or discipline are hours during which they are not covering pertinent subject matter. As has been the case for many of the other variables in this section, however, we find no significant relationship between these nonproductive hours and cadets' outcomes at the program level.

Figure 15. Average hours teachers spend per week on administrative and disciplinary tasks, by ChalleNGe program<sup>a</sup>



Source: CNA tabulations of teacher survey data.

<sup>a</sup> The black line in the figure corresponds to the secondary vertical axis and represents the number of responses included in each bar's calculation.

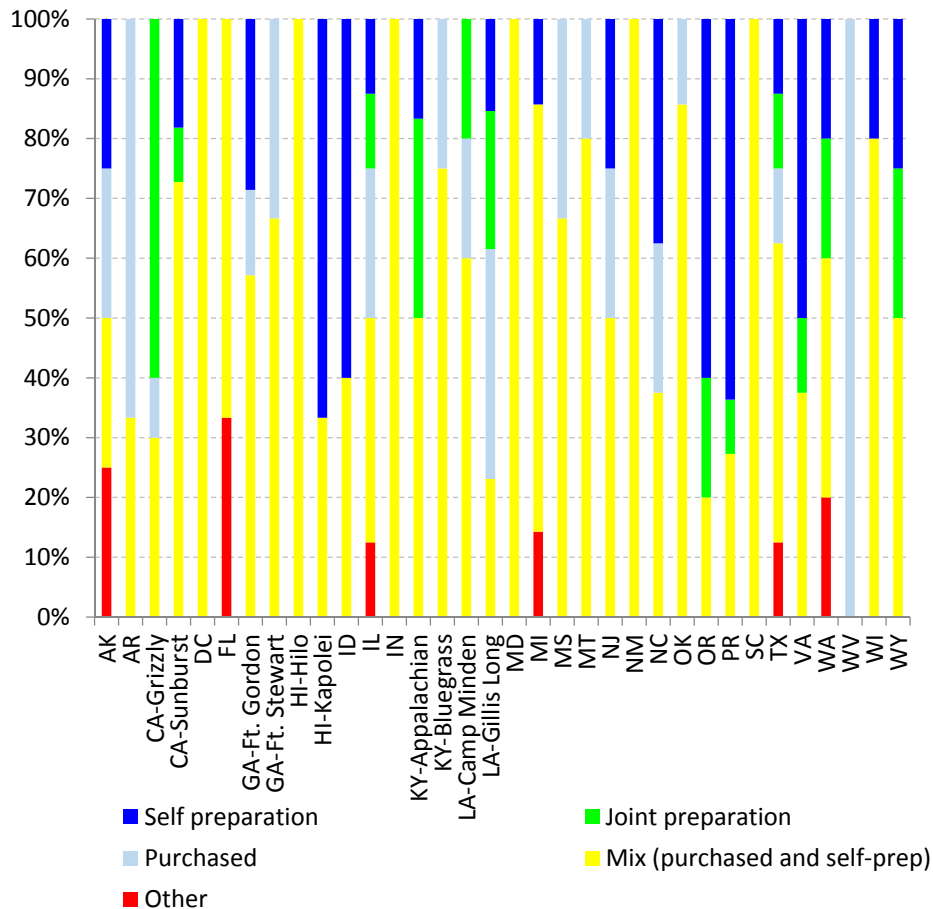
## Pedagogical methods

We now turn to pedagogical methods, which encompass teachers' preparation of their course materials, the amount of homework they typically assign, and whether they tailor their course materials for specific students as needed. Figure 16 displays, by ChalleNGe program, the distribution of teachers' responses to who prepared their daily course materials. The options provided were self-preparation, joint preparation with other ChalleNGe staff, purchased materials, a mix of self-developed and purchased materials, and other.<sup>18</sup> In the overall sample, the majority of teachers (53 percent) indicated that they use some mix of purchased and self-prepared materials.

<sup>18</sup> "Purchased materials" here refers to teachers' use of materials purchased by their ChalleNGe program, not materials purchased by the teachers themselves.

The remaining 47 percent are divided as follows: 20 percent self-prepared, 11 percent jointly prepared, 13 percent purchased, and 3 percent other.

Figure 16. Distribution of teachers' course material preparation methods, by Challenge program



Source: CNA tabulations of teacher survey data.

A few interesting outliers observable in Figure 16 are the high prevalence of teachers using only self-prepared materials in Hawaii-Kapolei, Idaho, Oregon, and Puerto Rico (all 60 percent or greater) and the prevalence of teachers using purchased materials daily in Arkansas, Georgia-Fort Stewart, Louisiana-Gillis Long, Mississippi, and West Virginia (all 30 percent or greater). As with the other pedagogical variables, we find little correlation between who prepared teachers' daily course materials and our outcome measures. The one exception is the change in TABE score: programs with a higher percentage of teachers using purchased materials are also programs with a higher average TABE improvement among their cadets. We suspect that this may be

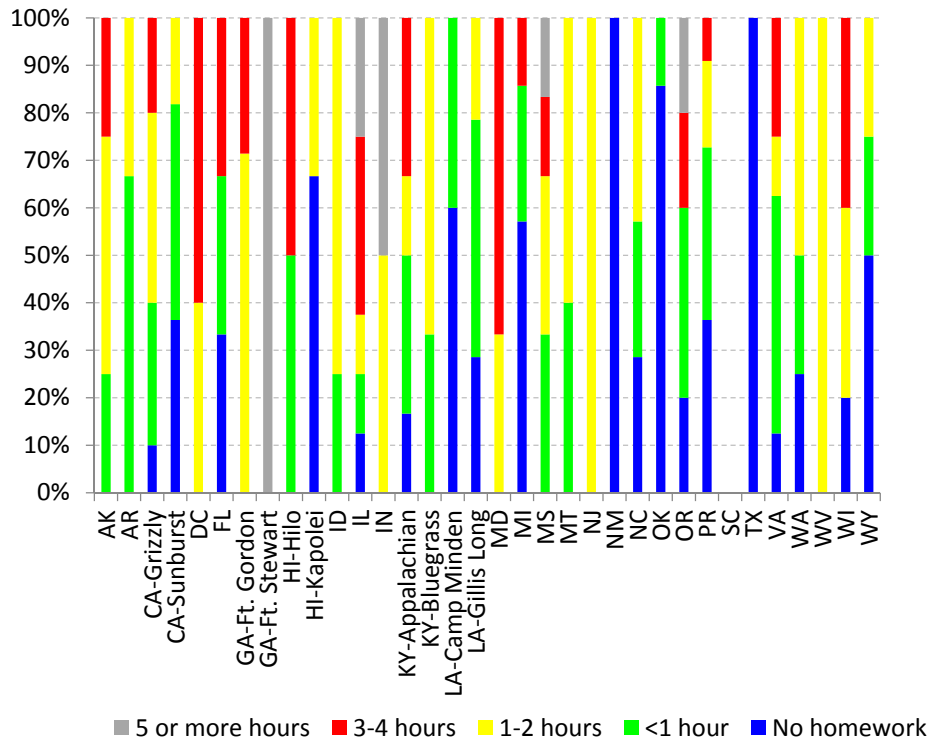
because some of the most commonly purchased materials are standardized-test preparatory materials. This is, of course, only a supposition.

We find significant variation across ChalleNGe programs in the average amount of homework teachers assign per week. We asked how much homework teachers assign in a typical week, and possible responses included none, <1 hour, 1-2 hours, 3-4 hours, and 5 or more hours. In the sample as a whole, the three most common responses were no homework, less than 1 hour, and 1-2 hours, each accounting for 27 percent of responses. Roughly 14 percent of teachers indicated that they assign 3-4 hours per week, and the remaining 4 percent responded that they assign 5 or more hours of homework in a typical week.<sup>19</sup> We found the number of teachers assigning no homework as well as the number assigning 5 or more hours per week to be surprising. The majority of teachers (50 percent or more of survey respondents) indicated that they assign no homework in a typical week at the following programs: Hawaii-Kapolei, Louisiana-Camp Minden, Michigan, New Mexico, Oklahoma, Texas, and Wyoming. At the other extreme, teachers assigning 5 or more hours of homework were concentrated in the Georgia-Fort Stewart, Illinois, Indiana, Mississippi, and Oregon programs. Even with the program-level variation in homework assignments shown in Figure 17, we still find little correlation between these homework variables and cadet outcomes, with one exception. Programs, on average, with a higher concentration of teachers assigning less than 1 hour of homework per week (compared with those assigning no homework) have higher cadet graduation rates and higher 1-month placement rates. There was no statistically significant difference in cadet outcomes for any of the other homework variables (e.g., cadet graduation rates at programs with a high percentage of teachers assigning 1-2, 3-4, or 5 or more hours of homework are indistinguishable from those with a high percentage of teachers assigning no homework). These findings suggest that cadets respond positively to a small and manageable number of tasks to complete outside class, which perhaps instills a sense of responsibility and accountability.

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<sup>19</sup> These numbers do not add to 100 due to rounding.

Figure 17. Average homework hours assigned per week, by ChalleNGe program

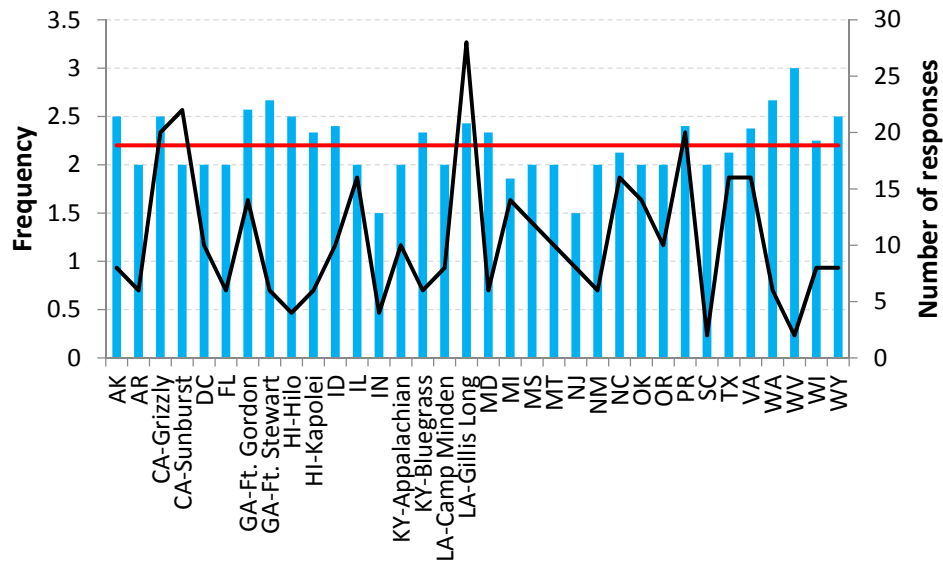


Source: CNA tabulations of teacher survey data.

The final question we asked all teachers regarding their overall teaching approach was how frequently, if at all, they change their instructional methods for specific students. On one hand, we might expect a high prevalence of “tailoring” to improve cadet outcomes. Varying instructional methods allows teachers to maximize the “efficiency” of their instruction with individual cadets. On the other hand, we could imagine a scenario in which excessive “tailoring” results in core content not being conveyed. To answer this question, we coded this variable to take a value of 0 for teachers who said they never changed their instructional methods for specific students, 1 for those who did so rarely, 2 for those who did so some of the time, and 3 for those who did so most of the time. The average value of this variable, by ChalleNGe program (along with the national average), is presented in Figure 18. All the program-specific variation occurs between values of 1.5 and 2.5—a rather narrow range (representing, at its extremes, teachers who fall somewhere between “rarely” and “some of the time” and those who fall between “some of the time” and “the majority of the time”). Similarly, the national average is 2.2. Likely as a result of this compressed range of values, we find no statistically significant correlations between the frequency of “tailoring” and any of our outcome variables. If teachers indicated

that they change instructional methods for specific students, we asked why they do so, with three possible responses: (1) students are at different places academically; (2) students have different learning styles; and (3) other. The responses were 46 percent for option 1 and 52 percent for option 2; only 2 percent responded with “other.” Thus, teachers’ responses were nearly equally divided between the two options we provided.

Figure 18. Average frequency of changing instructional methods for specific students, by ChalleNGe program<sup>a</sup>



Source: CNA tabulations of teacher survey data.

<sup>a</sup>. The red line denotes the sample average. The black line corresponds to the secondary vertical axis and represents the number of responses included in each bar’s calculation.

Thus, we found that only two of the three characteristics of “overall teaching practices” have *any* relationship with cadets’ outcomes (whether at ChalleNGe or longer term). Specifically,

- Programs where a higher percentage of teachers used purchased course materials as their primary daily material showed greater average TABE improvements. We suspect this is because the programs’ purchased materials most likely include standardized-test preparatory materials.
- Programs whose teachers, on average, assign less than 1 hour of homework per week have higher graduation rates and 1-month placement rates. This is likely due to the fact that cadets’ days are highly scheduled, leaving little time to dedicate to homework. As a result, the noncognitive skills acquired at ChalleNGe—such as independence and motivation—are more likely to prepare

them for college and employment than having a substantial amount of homework.

These findings might suggest that these teaching practices should be considered “best practices” and be adopted elsewhere. As previously discussed, however, our analytical framework—and specifically the fact that we are analyzing program-level averages and are unable to match teachers to cadets—is not rigorous enough to warrant making policy decisions based on these findings. An individual-level analysis would be necessary to draw such conclusions.

## Subject-specific pedagogical approaches

In addition to the pedagogical questions already summarized, which were asked of all teachers, our survey also contained a subset of questions asked only of math teachers, and a separate subset asked only of English/language arts teachers. We asked additional questions of these two groups because their subjects are generally considered the two core curricular areas. This is especially true at ChalleNGe, since success on the GED and other standardized tests used at ChalleNGe hinges primarily on skills in these two areas. In this final subsection, we characterize the pedagogies for teachers of math and English/language arts—with greater detail on the specific content covered in class—and analyze whether these pedagogies are related to any cadet outcomes.

### Math

A third (65 out of 191) of our survey respondents answered the questions for math teachers only, thus identifying themselves as math teachers.<sup>20</sup> We asked math teachers how often they address specific math subjects—such as geometry, algebra, and learning to communicate math ideas effectively—in a typical math class, to determine not only how much this varies across programs but also whether the math subjects covered affect cadets’ outcomes. For analytical purposes, we grouped the specific math subjects on our survey into four aggregate categories: basic math skills, advanced math skills, problem-solving skills, and math communication.<sup>21</sup> While

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<sup>20</sup> This number is higher than the number of teachers who indicated, earlier in the survey, that they currently teach math (59). We chose to retain the six teachers who did not previously identify themselves as such in the sample for our math-focused analyses, under the assumption that although they might not *currently* be teaching math, they at some time taught have math in the ChalleNGe program.

<sup>21</sup> Basic math skills include (among others) “whole numbers and whole number operations”; advanced math skills include “data analysis”; problem solving includes “developing reasoning/analytical skills to solve problems; and math communication includes “learning to communicate math ideas effectively.”

there is some variation across programs, most are close to the sample averages of 2.2 hours for basic math, 2.2 hours for advanced math, 2.4 hours for problem solving, and 2.2 hours for math communication. When considering the impact of math subjects and the extent to which they are covered in a typical class period, we do find some statistically significant relationships. Namely, basic math is negatively correlated with programs' graduation rates, 1-month placement rate, 6-month placement rate, and 12-month placement rate. That is, programs whose math teachers emphasize basic math topics, on average, have lower graduation and cadet placement rates.<sup>22</sup> In addition, we find a positive and significant relationship between advanced math topics and cadets' 6-month placement rate. It is, of course, possible that the amount of time spent on different math topics is directly related to student ability. Teachers whose classes are composed of cadets with better math skills may spend more time on advanced topics simply because there is less need to focus on basic math topics. Thus, this finding might actually be related only to cadets' math abilities (as opposed to teachers' choices regarding what topics to cover), and it may be that the more able cadets find it easier to maintain their focus and motivation, thus increasing their probability of finishing the program. Finally, and unexpectedly, we find a negative relationship between "problem-solving" emphasis and the 12-month placement rate; we suspect that either this is an anomaly (due to the fact that we're estimating program-level data) or it reflects a trade-off between emphasizing "problem solving" or "advanced math," with the latter being more important to placement.

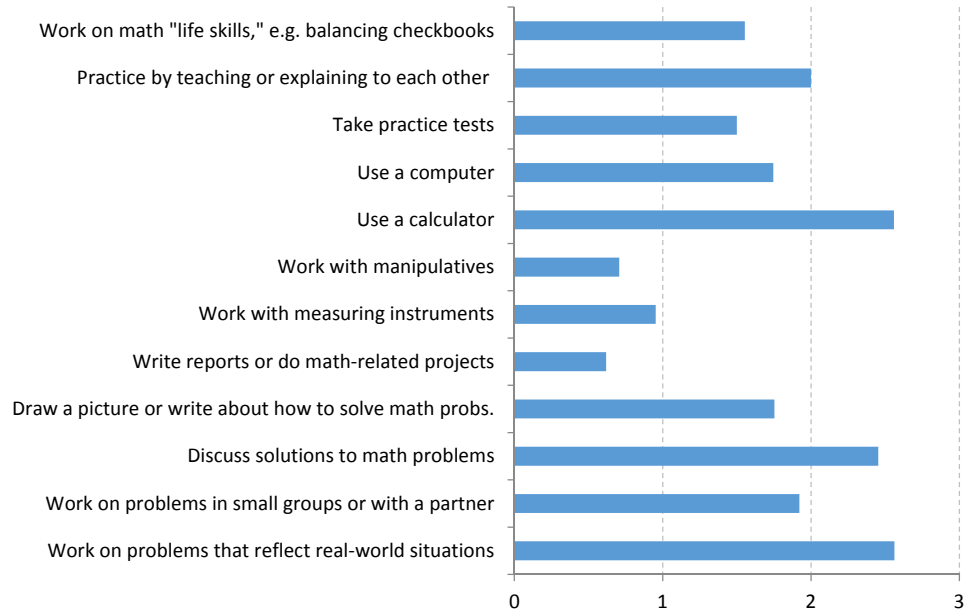
We also asked math teachers about the frequency of different activity types in their classrooms. The average distribution of math-class activities, for the entire sample, is illustrated in Figure 19. Not surprisingly, writing reports/doing math-related projects, working with manipulatives, and working with measuring instruments are the three least common activities, occurring on average between "never or hardly ever" and "once or twice a month." Among the most common activities are using a calculator, discussing solutions to math problems, and working on problems that reflect real-world situations.

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<sup>22</sup> As we presented in an earlier section (Table 2), only 9 percent of math teachers (nationally) majored in math. As a result, we investigated whether this negative relationship between basic math and outcomes is being driven by non-math-majors teaching math. That is, are these teachers focusing on basic math because they lack the foundation to teach more advanced math topics? This is not the case: there is no statistically significant relationship between the prevalence of basic math topics and whether math teachers majored in math.



Figure 19. Frequency of math-class activities<sup>a</sup>



Source: CNA tabulations of teacher survey data.

<sup>a</sup>. Activity frequency is coded as follows: 0 is "Never or hardly ever," 1 is "Once or twice a month," 2 is "Once or twice a week," and 3 is "Almost every day."

We also estimated whether the frequency of math-class activities is correlated with cadet outcomes. Table 5 summarizes these results. Only a handful of results are significant, and activities' importance (and direction of effect) varies by the cadet outcome being considered. Programs whose math teachers have cadets work more frequently with measuring instruments, for example, tend to have higher graduation rates but lower levels of TABE improvement. Another counterintuitive finding is the negative relationship between working on real-world problems and cadets' average 12-month placement rate. As previously stated, anomalies such as this may be explained by the fact that we are estimating regressions using only average-level data, since we are unable to match specific teachers to cadets. The two most striking findings in this table are the positive and significant correlation of both working in small groups and working on "math life skills" with multiple positive cadet outcomes. This may suggest that these two activity types are particularly productive, not only in improving cadets' math skills, but also in preparing them in other ways for life after ChalleNGe. In addition, they could be reflecting underlying reverse causality: perhaps the cadets' ability levels upon entrance (and thus likelihood of achieving TABE improvement or graduating from ChalleNGe) determine the activities

teachers choose to assign in math class, as opposed to the activities influencing the cadets' average success rates. Without individual-level data, we cannot dissect this.

Table 5. Impact of math-class activities on cadet outcomes<sup>a</sup>

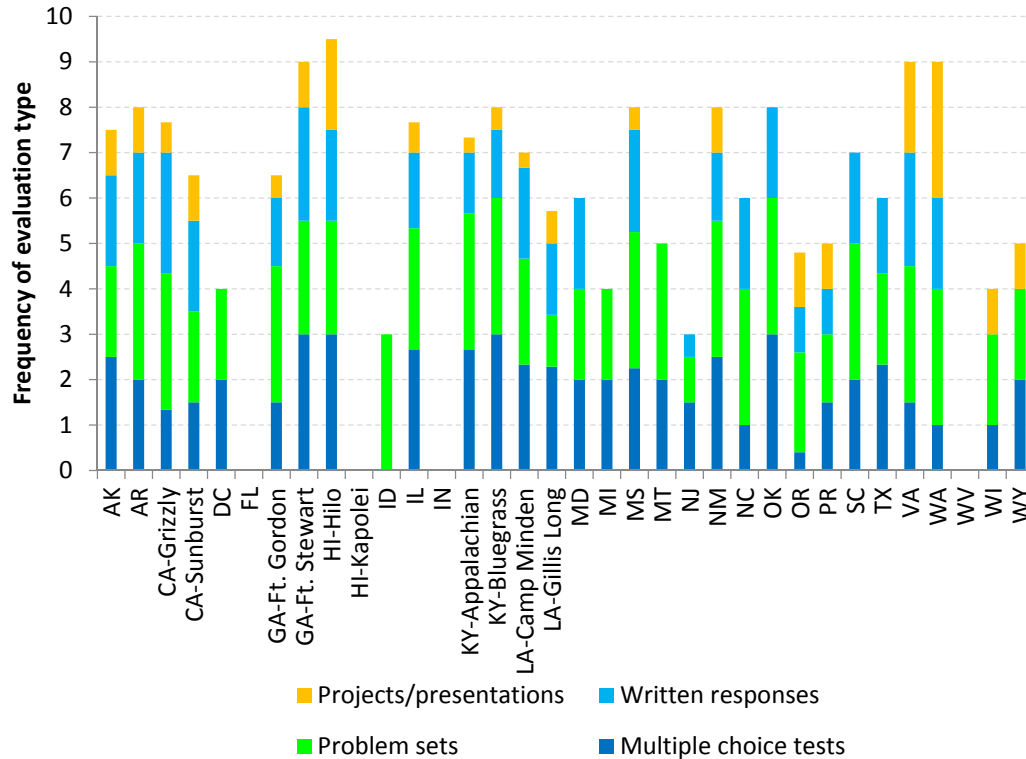
Activity	Program graduation rate	TABE change	Placement rate		
			1-month	6-month	12-month
Work on problems that reflect real-world situations	Insig.	Insig.	Insig.	Insig.	<0
Work on problems in small groups or with a partner	>0	>0	Insig.	>0	Insig.
Discuss solutions to math problems	Insig.	Insig.	Insig.	Insig.	Insig.
Draw a picture or write about how to solve math problems	Insig.	Insig.	Insig.	Insig.	Insig.
Write reports or do math-related projects	Insig.	>0	Insig.	Insig.	Insig.
Work with measuring instruments	>0	<0	Insig.	Insig.	Insig.
Work with manipulatives	<0	Insig.	Insig.	Insig.	Insig.
Use a calculator	Insig.	Insig.	Insig.	Insig.	Insig.
Use a computer	Insig.	Insig.	Insig.	Insig.	Insig.
Take practice tests	Insig.	Insig.	Insig.	Insig.	Insig.
Practice by teaching or explaining to each other	Insig.	Insig.	Insig.	Insig.	Insig.
Work on "math life skills" (e.g., balancing checkbooks)	>0	Insig.	Insig.	>0	>0

Source: CNA regression analysis of teacher survey and annual report data.

<sup>a</sup>. "Insig." indicates that the relationship between that math-class activity and the outcome variable of interest is statistically insignificant.

The final three questions we asked math teachers were what types of assignments they give their students, how adequate they feel their students' math skills are at the beginning of the program, and their math teaching philosophies. Figure 20 presents the average per-teacher frequency of different evaluation/assignment types, by program. We asked how frequently teachers use each of the following in their classes: multiple-choice tests, problem sets, short or long written responses, and individual or group projects or presentations. The possible responses were "never or hardly ever," "a few times during the course," "once or twice a month," and "at least once a week," and these were assigned values of 0 to 3, respectively. The maximum value achievable in Figure 20 is 12—corresponding to a value of 3 for each of the four categories. Teachers at most programs indicated using a combination of all four evaluation types. There are, however, a number of outliers (i.e., programs whose math teachers indicated using fewer than four assignment types): District of Columbia, Idaho, Michigan, Montana, New Jersey, North Carolina, Oklahoma, South Carolina, and Texas.

Figure 20. Average per-teacher frequency of evaluation type, by Challenge program<sup>a</sup>



Source: CNA tabulations of teacher survey data.

<sup>a</sup>. No teachers from FL, HI-Kapolei, IN, or WI responded to this question.

Because of this variation—and the fact that not all math teachers use all four evaluation types—we investigated whether assignment type correlated with cadet outcomes. This analysis revealed only one significant relationship: programs' average graduation rates are negatively correlated with the prevalence of multiple-choice tests. This may be because this particular evaluation type requires only that students choose the correct answer from a list of possibilities rather than engage with the material the way the other three evaluation methods require. In addition, multiple-choice tests *provide* students the correct answer (among possible wrong answers), so their arriving at the correct answer is passive; of the four evaluation types, it elicits the least amount of critical thinking on the part of cadets. We recommend, however, that individual-level analysis be conducted to confirm this relationship before discouraging the use of multiple-choice tests.

Our question about cadets' math competency at the beginning of the program asked teachers to rate separately their students' skills in addition and subtraction,

multiplication, and division. For each of these three math skills, teachers had four options from which to choose (which we then assigned values of 0 to 3):

- No students are very competent
- Few students are very competent
- Some students are very competent
- Most students are very competent

In most cases, teachers rated their students' initial math skills highest in addition and subtraction, followed by multiplication, and then division. As we would expect, since these skills build in complexity, at no programs did teachers rate their students' initial skills in either multiplication or division higher than those in addition and subtraction. The sample averages for these three competencies are 2.3 for addition/subtraction, 1.7 for multiplication, and 1.4 for division (where an average score of 1.4, for example, falls between "few students are very competent" and "most students are very competent"—slightly closer to the former than the latter). The programs that stand out are those whose students' initial math skills are either substantially higher or lower than the sample average. For addition and subtraction, these include the various programs with an average student competency of 3 (above the sample average) as well as Puerto Rico, South Carolina, New Jersey, and Georgia-Fort Stewart (below the sample average).<sup>23</sup> None of these competency variables, however, are significantly correlated with cadets' outcomes. This may suggest that teachers' beliefs are not entirely accurate or—as we have found in other work (see [11])—that cadets' initial skill levels are not important predictors of their overall program success.

Finally, we collected information on math teachers' "teaching philosophy." Specifically, teachers were asked to choose which of the following statements more closely aligns with their teaching philosophies:<sup>24</sup>

1. Students must be taught math skills based on formulas or algorithms. Instruction should emphasize procedural mathematics and provide step-by-step examples with skill exercises. Focus should be placed on the memorization of basic math facts and on teaching algorithms that efficiently lead to the correct answer. (Formula-based and algorithmic thinking)

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<sup>23</sup> Those programs with an average competency of 3 for addition and subtraction are California-Grizzly, Idaho, Kentucky-Bluegrass, Louisiana-Camp Minden, Montana, North Carolina, Texas, and Washington.

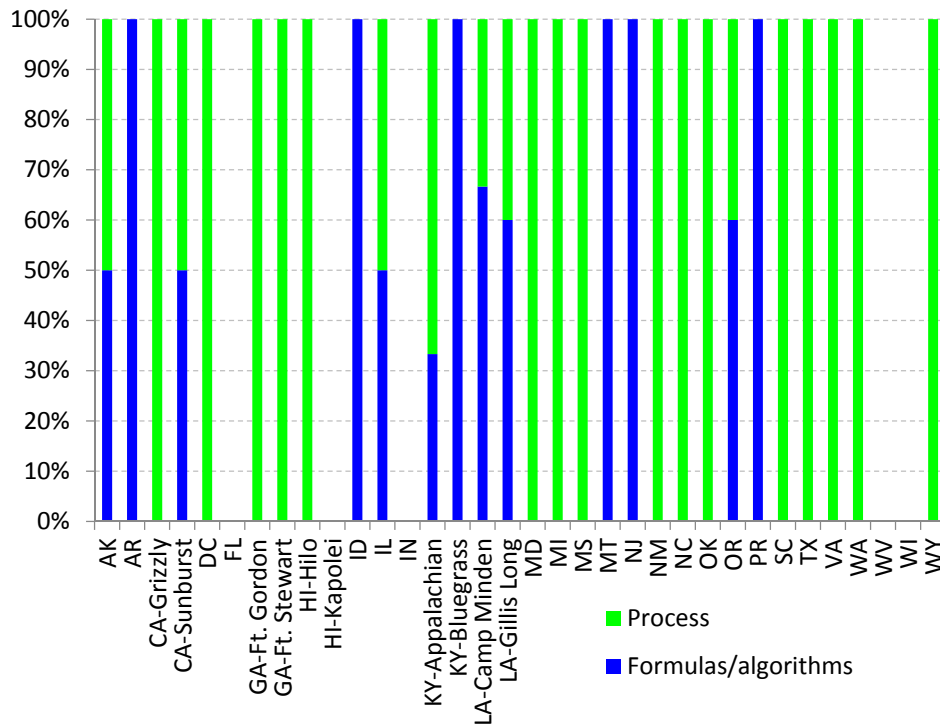
<sup>24</sup> The history of changes in math education in the U.S. and the difference between these two philosophies is discussed in more detail in [12] and [13].

2. Instruction should be focused on the process of leading to the correct answer, rather than the answer itself. Students are encouraged to represent, describe, and communicate mathematical ideas by a variety of methods. Conceptual understanding is the primary goal; algorithmic fluency will follow secondarily. Students should learn how to make connections between concepts. (Critical thinking)

We asked teachers to choose between these two philosophies—while acknowledging that neither statement may reflect their *exact* philosophies—since they represent the two sides of an ongoing debate about how math should be taught in the United States. We were, of course, interested not only in how the ChalleNGe teachers align their teaching philosophies with these two statements, but also whether this has any relationship to programs’ average cadet outcomes. Overall, “critical thinking” was chosen more frequently than “formula-based and algorithmic thinking”: of 53 math teachers, 35 chose the former and 18 chose the latter. The program-level variation in philosophies is displayed in Figure 21. Programs with a particular emphasis on the “formula-based and algorithmic thinking” approach include Arkansas, Idaho, Kentucky-Bluegrass, Louisiana-Camp Minden, Louisiana-Gillis Long, Montana, New Jersey, Oregon, and Puerto Rico. These programs’ average math philosophies deviate significantly from the sample average, leading us to investigate whether the particular math philosophy with which teachers align themselves affects cadet outcomes. We found, however, no significant relationship between average math philosophy and cadet outcomes at the program level (including program graduation rate, TABE change, and postresidential placement rates).

Of all the subject-specific information gathered from math teachers, we found significant correlations only of specific math subjects, math-class activities, and assignment types with cadet outcomes. In each of these cases, only a subset of the variables was significant (e.g., “basic math” and “advanced math” among the math subjects) and their significance varied with different cadet outcomes (e.g., program graduation rate versus 1-month placement rate). We did, however, find preliminary evidence that the math subjects emphasized, the type of activities conducted in math class, and the way students are evaluated in math are correlated with longer term measures of cadet success. This suggests that more robust, individual-level analysis should be conducted in this area, to identify how to most effectively structure ChalleNGe math curricula.

Figure 21. Math teachers' philosophies, by ChalleNGe program<sup>a</sup>



Source: CNA tabulations of teacher survey data.

<sup>a</sup> No teachers from FL, HI-Kapolei, IN, WI, or WV responded to this question.

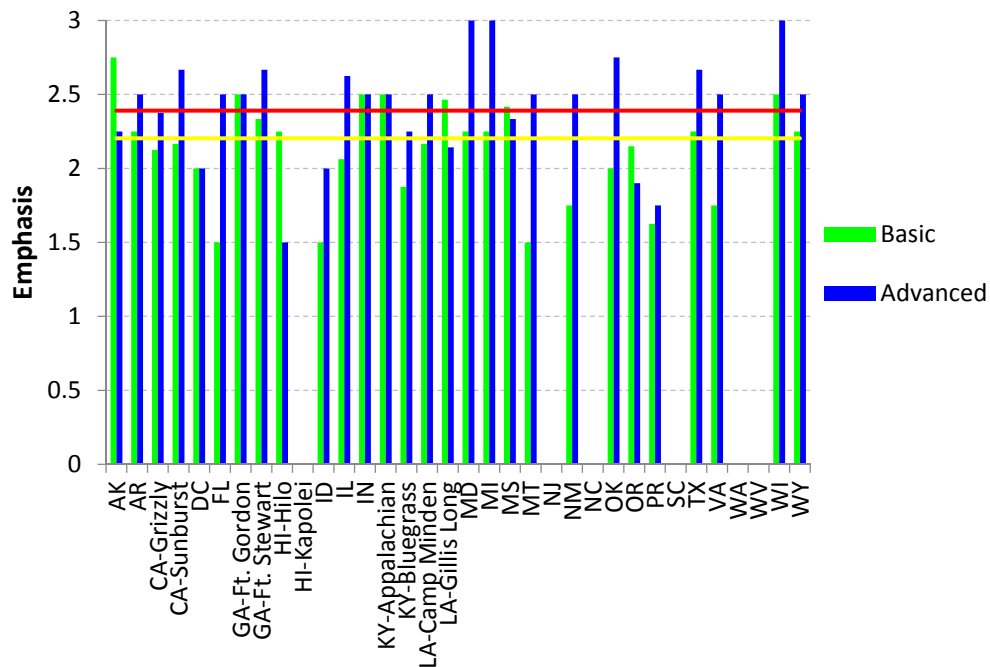
## English/language arts

About a third (63 of 191) of our survey respondents answered the questions for English/language arts teachers only, thus identifying themselves as English/language arts teachers.<sup>25</sup> Similar to our approach for math teachers, we asked how much emphasis these teachers place on different topics—including grammar, literature, composition, reading comprehension, study skills, and spelling—in order to determine how their subject-matter emphases vary across programs and whether these are correlated with cadets' average outcomes. For analytical purposes, we grouped these specific subjects into two aggregate categories: basic English subjects and advanced English subjects. The basic subjects include grammar, reading comprehension, study skills, and spelling; the advanced subjects include literature and composition. Possible responses for each of the six subjects listed include “not

<sup>25</sup> Earlier in the survey, 126 teachers indicated that they currently teach English/language arts. This suggests that 63 English/language arts teachers chose not to answer the subject-specific questions.

covered,” “review topic,” “minor topic,” and “major topic.” We recoded these variables to take values ranging from 0 to 3, with 0 representing “not covered”; the program-level averages are presented in Figure 22.

Figure 22. Emphasis placed on basic and advanced English/language arts topics, by ChalleNGe program



Source: CNA tabulations of teacher survey data.

<sup>a</sup> No teachers from HI-Kapolei, NJ, NC, SC, WA, or WV responded to this question. For HI-Kapolei, SC, WA and WV, this is because no teachers identified themselves as English/language arts teachers.

<sup>b</sup> The yellow line represents the sample average for basic English/language arts skills; the red line represents the sample average for advanced skills.

The red line in Figure 22 represents the sample average for teachers’ emphasis on advanced subjects; the yellow line is the sample average for emphasis on basic subjects. At most programs, teachers emphasize advanced English/language arts topics over basic ones, as is also true for the sample as a whole.

While there is some variation across programs, most are close to the sample averages of 2.2 hours for basic topics and 2.4 hours for advanced topics. A few notable findings include the particularly high emphasis on advanced topics at the Maryland, Michigan, Oklahoma, and Wisconsin programs; the low emphasis on advanced topics in Hawaii-Hilo, Oregon, and Puerto Rico; the high emphasis on basic topics in Alaska, Georgia-Fort Gordon, Illinois, Louisiana-Gillis Long, and Wisconsin; and the low emphasis on basic topics in Florida, Idaho, Montana, New Mexico, Puerto Rico, and

Virginia. The magnitude of English/language arts teachers' average emphasis on basic versus advanced topics, however, has no significant correlation with any of the cadet outcomes (at the program level).

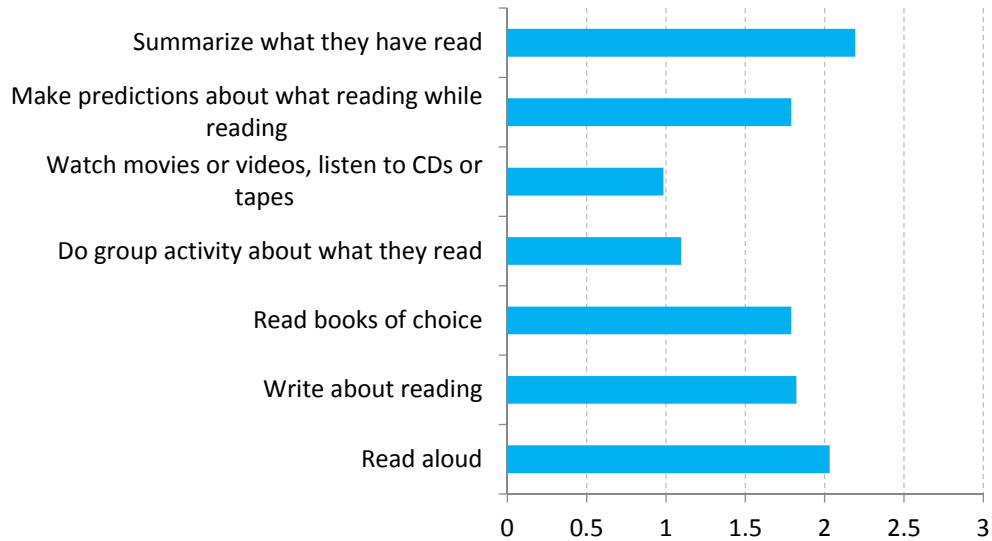
In addition to grouping English/language arts topics into basic and advanced, we asked teachers about their strategies for teaching English/language arts topics. Specifically, we asked teachers how often they ask their students to:

- Read aloud
- Write about what they have read
- Read books of their own choice in class
- Do a group activity about what they have read
- Watch movies or videos, listen to CDs or tapes
- Make predictions about what they are reading as they read
- Summarize what they have read

Teachers' possible responses are "never or hardly ever," "once or twice a month," "once or twice a week," and "almost every day," which we recoded to take numerical values ranging from 0 to 3, with 0 representing "never or hardly ever." The average frequencies for each activity type (for the sample as a whole) are presented in Figure 23. The least frequent activities are watching movies/videos or listening to tapes/CDs and doing a group activity about what they have read. On average, our survey respondents indicated that they use these activity types in their classrooms only "once or twice a month." The most common activities are summarizing what they have read, reading aloud, and reading books of their choice during class. As we have done with other pedagogical methods, we estimated the relationship between the frequency of these activity types and cadet outcomes. Only one of these seven English/language arts classroom activities is statistically significantly related to any cadet outcomes: reading books of their own choice in class. Specifically, the more often teachers asked students to read books of their choosing, the higher the average 6-month and 12-month postresidential placement rates. This suggests that this particular English/language arts activity has long-term impacts on cadets, perhaps by teaching them how to be independent and possibly improving their desire to learn. As we discussed in the math subsection, it is possible that any findings of positive association between English/language arts activities and cadet outcomes are a result of reverse causality. If English/language arts teachers choose their classroom activities based on cadets' ability levels (i.e., what they think the cadets can manage), then in lieu of classroom activities influencing the likelihood of postresidential placement, it may be that the postresidential placement success is a function of cadets' innate abilities (and that the classroom activities were chosen based on these abilities). These possible relationships cannot be differentiated without individual-level data.



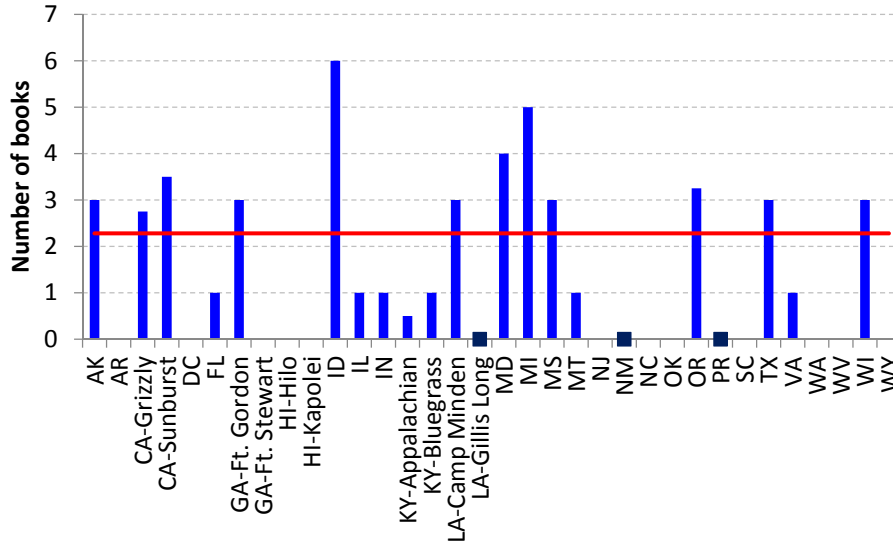
Figure 23. Frequency of English/language arts activities, for the program as a whole



Source: CNA tabulations of teacher survey data.

We also asked English/language arts teachers how many books they require cadets to read in the course of their classes (which are approximately five months long) and how often they use different types of literature. The average number of books that English/language arts teachers require cadets to read, by program, is illustrated in Figure 24. The average for the sample as a whole, shown by the red line, is 2.3 books. The program-specific averages vary significantly, from a maximum of 6 books in Idaho to no books at Louisiana-Gillis Long, New Mexico, and Puerto Rico. Regardless of these variations, however, the average number of books that cadets are required to read in the course of a class is statistically insignificantly related to all cadet outcome variables. That is, the average number of books that English/language arts teachers at a particular ChalleNge program require their cadets to read is not correlated with the program's average graduation rate, change in TABE scores, or postresidential outcomes.

Figure 24. Average number of books teachers require cadets to read, by Challenge program<sup>a,b</sup>



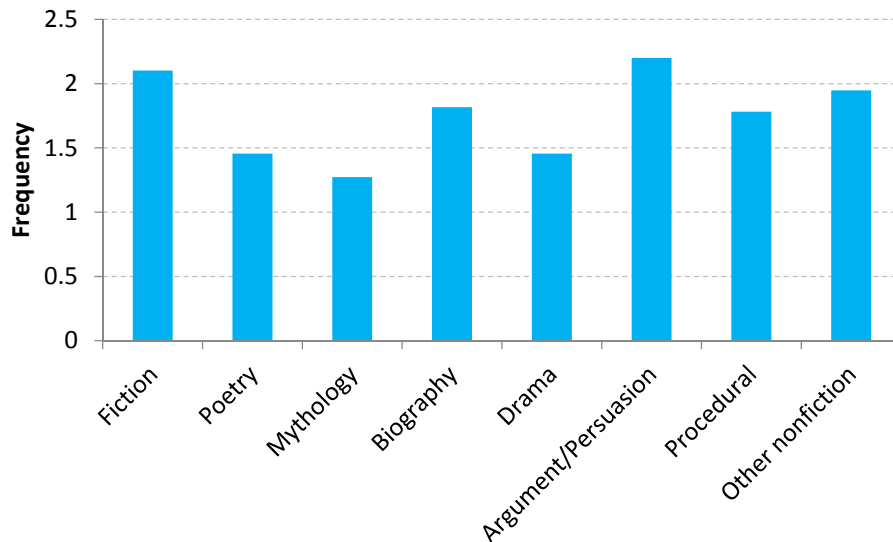
Source: CNA tabulations of teacher survey data.

<sup>a</sup>. The red line denotes the sample average.

<sup>b</sup>. The squares on the x-axis denote those programs whose English/language arts teachers indicated that they do not require cadets to read any books. The other programs with no data either had no English/language arts teachers among respondents or their English/language arts respondents did not answer this question.

We asked teachers how frequently they used different types of literature, including, fiction, poetry, mythology, biography, drama, argument/persuasion, procedural, and other nonfiction. Teachers' possible responses included "never," "rarely," "some of the time," and "majority of the time" (which we recoded to take values of 0, 1, 2, and 3, respectively). Figure 25 shows that the type of literature most commonly used in English/language arts classes is argument/persuasion, followed by fiction, other nonfiction, and biography. Mythology is the most infrequently used type, followed by poetry and drama. We also analyzed whether the program-level variation in the frequency of types of literature used was correlated with any cadet outcomes. It was not; the substitution of one literature type for another had no bearing, on average, on cadets' average outcomes at a particular program.

Figure 25. Average frequency of literature types used, all ChalleNGe programs



Source: CNA tabulations of teacher survey data.

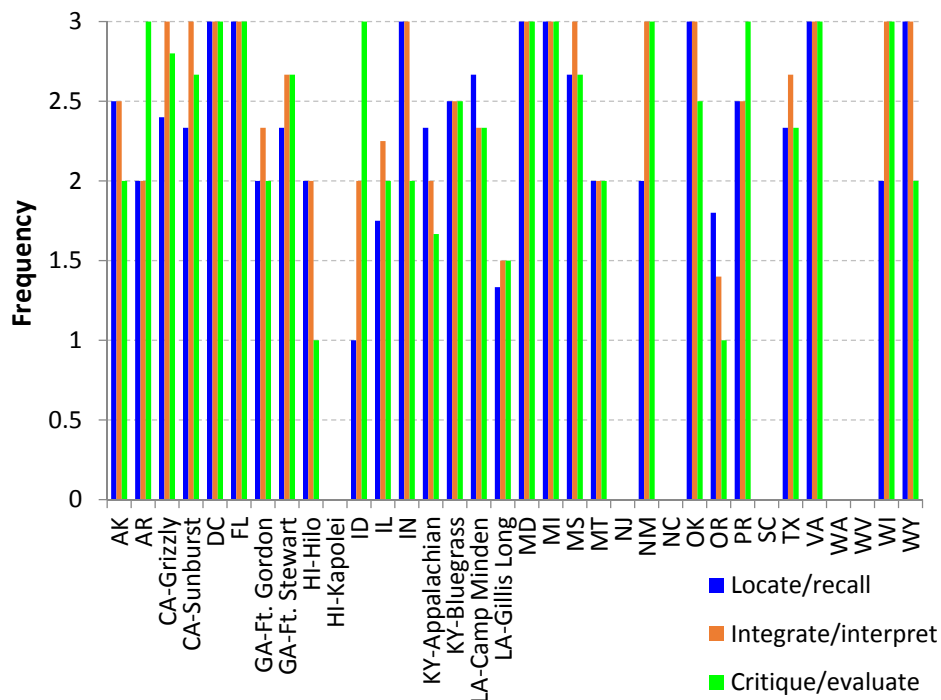
We also asked teachers about the particular processes they emphasize when reading informational and library texts in class. We specifically asked about the frequency of three different processes: locate/recall material, integrate/interpret material, and critique/evaluate material. Possible responses included “not at all,” “to a small extent,” “to a moderate extent,” and “to a large extent,” to which we applied respective values of 0, 1, 2, and 3. The average frequencies of these reading processes are presented, by program, in Figure 26. In the sample as a whole, teachers’ average emphasis on locate/recall was 2.22, indicating that the average teacher emphasized these topics “to a moderate extent.” The sample averages for integrate/interpret and critique/evaluate were 2.41 and 2.22, respectively. We were particularly interested in the number of programs whose teachers indicated emphasizing critique/evaluate, since this process might be considered the most advanced level of engaging with the material. As Figure 26 illustrates, teachers’ indicated that they emphasized critique/evaluate to a large extent at a number of programs, including Arkansas, District of Columbia, Florida, Idaho, Maryland, Michigan, New Mexico, Puerto Rico, Virginia, and Wisconsin. Our analysis of the correlation between these three different categories of emphasis and cadet outcomes revealed the following:

- The emphasis placed on critique/evaluate is positively and statistically significantly associated with cadets’ 6-month placement rates, at the program level. Specifically, a one-unit increase in this variable (indicating a change, for example, from “not at all” to “to a small extent” or from “to a moderate

extent” to “to a large extent”) is associated with an increase, by 20 percentage points, of cadets’ average 6-month placement rate at that program.

- The average emphasis placed on critique/evaluate is also positively and significantly correlated with cadets’ average 12-month placement rate. In this case, a one-unit increase in this variable is associated with an increase in the average 12-month placement rate of 32 percentage points.
- The emphasis placed on integrate/interpret is negatively and statistically significantly associated with cadets’ 12-month placement rate. A one-unit increase in the average emphasis that a program’s teachers place on integrating/interpreting text is correlated with a 14-percentage-point decrease in the 12-month placement rate. This counterintuitive result may indicate a substitution effect—perhaps an increased emphasis on integrate/interpret results in a decreased emphasis on critique/evaluate and the latter is more important for placement rates.

Figure 26. Reading emphasis, by ChalleNGE program<sup>a</sup>



Source: CNA tabulations of teacher survey data.

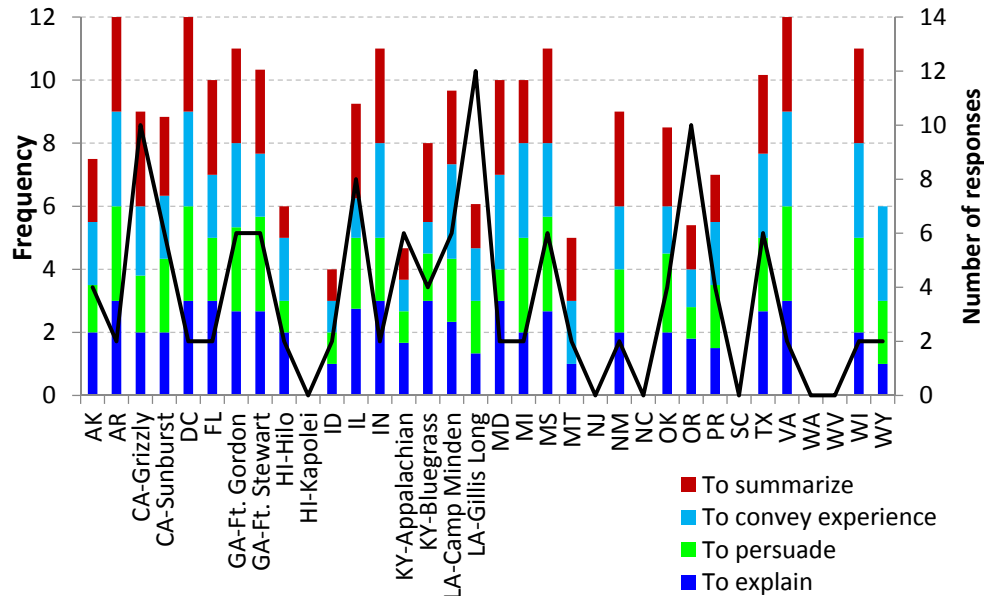
<sup>a</sup>. The programs with no data either had no English/language arts teachers among respondents or their English/language arts respondents did not answer this question.

In addition to their reading-related pedagogical methods, we asked English/language arts teachers two questions about their approaches regarding writing. In particular:

1. How often do you ask your students to write for each of the following purposes? The purposes included to explain, to persuade, to convey experience, and to summarize/synthesize material they have read. Possible responses were “never or hardly ever,” “a few times during the course,” “once or twice a month,” and “at least once a week.” These responses were then assigned values of 0 to 3, respectively.
2. When you are teaching writing, what percentage of your instructional time is spent on each of the following? Categories listed included development of ideas, organization of ideas, effectiveness of expression, and mechanics and convention. Teachers chose from percentage intervals: 0 to 24 percent, 25 to 49 percent, 50 to 74 percent, 75 to 89 percent, and 90+ percent.

Regarding these two questions, we evaluated both teachers’ responses and whether they are related to any of the cadet outcome variables. In terms of the frequency of different writing purposes, the average responses did not differ much from across writing purposes in the sample overall. Specifically, the average frequencies were 2.16 for “to explain,” 1.98 for “to persuade,” 2 for “to convey experience,” and 2.27 for “to summarize/synthesize.” Thus, for each writing purpose, the average response per teacher was close to 2, representing “once or twice a month.” The variation across programs is displayed in Figure 27. At the two extremes, teachers surveyed from the Arkansas, District of Columbia, and Virginia programs responded “at least once a week” for every writing purpose, whereas teachers at the Wyoming program indicated that they “never or hardly ever” have students write “to summarize,” and those from Idaho responded “a few times during the course” for each of the four writing categories. In terms of correlation of the frequencies of different writing purposes with cadets’ average outcomes, we find two statistically significant relationships. First, how often teachers have students write to *summarize* is positively correlated with both cadets’ average 6-month and 12-month placement rates. Conversely, how often teachers have students write to *explain* is negatively associated with both the average 6-month and 12-month placement rates. This counterintuitive finding may reflect a substitution effect. It may be that teachers who have students write to explain more often have them write to summarize less often, and the latter is positively correlated with the 6- and 12-month placement rates.

Figure 27. Average per-teacher frequency of writing purposes, by ChalleNGe program<sup>a,b</sup>



Source: CNA tabulations of teacher survey data.

<sup>a</sup>. The programs with no data either had no English/language arts teachers among respondents or their English/language arts respondents did not answer this question.

<sup>b</sup>. The black line corresponds to the secondary vertical axis and represents the number of responses included in each bar's calculation.

Of all the subject-specific information gathered from English/language arts teachers, we found significant correlations of only the most-emphasized reading processes and the frequency with which teachers have their cadets write for different purposes. In each of these cases, only a subset of the variables was significant (e.g., critique/evaluate and integrate/interpret among the reading processes), and their significance varied with different cadet outcomes (e.g., program graduation rate versus 1-month placement rate). We do, however, find preliminary evidence that the reading processes emphasized and the frequency with which cadets are asked to write for different purposes are correlated with longer term measures of cadet success. This suggests that more robust, individual-level analysis should be conducted in this area, to identify how to most effectively structure ChalleNGe English/language arts curricula.

## Recommended Classroom Strategies

The survey gave respondents an opportunity to share information about the teaching or classroom management techniques they have found to be particularly effective. Our goal was to compile a list of the most frequently cited “lessons learned” in the hopes they could be adopted by other ChalleNGe teachers. This section summarizes the teachers’ responses.

This survey question was open-ended, allowing teachers to write as much as necessary to fully answer the question. Of the 191 surveys submitted, 71 responded to this question and included 96 separate comments or ideas. We grouped these comments into broad categories. Most comments (all but 12) contained some version of the following recommendations:

- **Be flexible with your teaching methods:** Teachers commented that, given the often broad range of academic abilities of their students on arrival at ChalleNGe, successful teachers must be prepared to change the content and/or delivery of their lessons to meet the needs of the students. In the words of one teacher, “teachers need a wide variety of tricks in their bags and [must] be flexible about where and when to use them, especially when working with at-risk youth.” Teachers also noted that they use a combination of small-group, individual, and whole-class instruction depending on the topic and the level of their students’ knowledge.
- **Work to build relationships with your students:** Numerous comments centered on teachers’ feelings that, especially with at-risk youth, developing student/teacher relationships based on trust is critical to students’ achieving academic success. The students need to know that their teachers care about them as more than just a student. “I want to earn the students’ trust so they can feel relaxed and happy in class,” said one. Teachers also felt that a strong teacher/student relationship helped minimize behavioral issues, thus allowing for more effective classroom management.
- **Ensure that your lessons are engaging and relevant:** Students typically enter the ChalleNGe program with negative feelings about school and learning. To combat this and help the cadets begin to believe in themselves and their ability to learn, teachers noted that using engaging lessons that are relevant to cadets’ lives can help capture their attention and keep them motivated. This includes using hands-on projects, project-based learning, and contextual learning. As one teacher said, “I have learned that the most

effective way of teaching the cadets is by adapting the material to tangible and relevant things that occur or have been experienced in their daily lives.”

- **Set clear expectations:** To help students succeed academically, teachers noted the importance of setting clear expectations early on regarding not just academics, but also behavior. As one teacher highlighted, “A number of these cadets are not used to being students. That is, they are not used to going to school every day and going to every [class] period.” The cadets need to be given specific guidelines so they can learn to be good students—a skill as important as the academic skills being taught. Teachers also noted that consistency was critical in the enforcement of those expectations. If cadets sense that they can get away with breaking the “rules,” they will.
- **Provide sufficient positive reinforcement:** ChalleNGe cadets are not accustomed to success in the classroom and are in special need of positive reinforcement regarding their education. They need to believe that they can learn and be successful academically. Positive reinforcement should include praise for doing good work, incentives for going beyond the required assignment, and reminders that they are capable students. Praising cadets who are staying on-task can also help to maintain classroom discipline since it may encourage those not receiving praise (because they are not “on task”) to shift their focus to the academic tasks at hand. These youth typically have received scant praise in the past, especially related to academic progress; thus, observing their peers being praised can serve as a motivating factor.

As noted throughout our discussion of our quantitative findings, in many cases we did not find a statistically significant relationship between our measures of teachers’ qualifications or pedagogies and cadets’ average outcomes. Although this may, in part, be due to the limitations of our analysis—including the fact that we cannot link teachers to students and are able only to correlate programs’ *average* characteristics with their cadets’ *average* outcomes, the lack of correlation may also suggest that unobservable teacher differences affect cadets’ outcomes. The recommended classroom strategies summarized here are likely candidates for unobservable (i.e., not surveyed) pedagogies that could significantly affect our measures of cadets’ success, both in the ChalleNGe classroom and beyond.



## Conclusions and Recommendations

The primary goal of this study was to enumerate how pedagogical approaches differ across ChalleNGe programs and to investigate whether these differences are correlated with short- and/or long-term cadet outcomes, including program graduation rate, TABE improvement, and postresidential placement. We also attempted to identify classroom methods that are especially effective with disadvantaged youth performing below grade-level. To do so, we used data from an online survey administered to all ChalleNGe teachers in addition to data from the ChalleNGe programs' annual reports. The primary contribution of this report, however, is to provide the ChalleNGe program with information on differences across the various sites that had previously been undocumented.

Due to the lack of detailed data, our analysis has some limitations. First, we cannot match teachers to particular cadets because all ChalleNGe cadets are under the purview of all teachers. This limits our analysis because individual-level data are necessary to confidently establish relationships between teacher characteristics and student outcomes.

Second, information on our outcome measures (program graduation rate, TABE improvement, and postresidential placement) is available only in average form at the program level. Thus, we cannot correlate specific teachers' pedagogical approaches or qualifications with *their* students' outcomes; we can only correlate programs' *average* teacher qualifications and pedagogical approaches with the programs' *average* cadet outcomes.

Third, the postresidential placement data are incomplete. Some cadets are unreachable after completing ChalleNGe and some likely refused to respond. In addition, the postresidential information we do have is less than ideal. Specifically, the postresidential placement rates we use are calculated by dividing the number placed by 1, 6, or 12 months by the total number of graduates in that class. It would be more accurate to divide the number of cadets placed by the number of cadets who provided postresidential placement information, but this information is not available. Further, the most recent postresidential data available are for *previous* classes; the teachers who responded to our survey may not be the teachers responsible instructing those cadets whose postresidential outcomes are captured in our data. Our findings, therefore, are most accurate for those programs with little teacher turnover since the postresidential cadets in the 2014 reports graduated. With these caveats in mind, we summarize our most notable findings below.

## Differences across programs

Our survey provides, for the first time, detailed information on ChalleNGe teachers' qualifications and pedagogical approaches, both as a whole and at individual programs. Our sample may not be representative of the entire ChalleNGe teacher population or the teacher population at any individual program because it is dependent on which teachers chose to complete the survey. That said, several teacher characteristics are worth noting.

Most ChalleNGe teachers are either English/language arts teachers or math teachers. These are the two subject areas critical for obtaining either a GED or a high school diploma (which is why our survey focuses on these two curricular areas). Fewer teachers teach science or social studies, making it possible that these two curricular areas are not receiving the focus they should in the ChalleNGe classrooms. While hiring additional staff to teach these topics could remedy this, funding issues at the program level may prevent it.

Our analysis of teacher qualifications across the entire sample revealed that ChalleNGe teachers, on the whole, are highly qualified. For example, 45 percent of teachers have *more* than a bachelor's degree, indicating a highly qualified teaching cohort. We did, however, find significant variation in the distribution of teachers holding more than a bachelor's degree across programs: 10 programs had no teachers who completed the survey holding more than a bachelor's degree. The average years of teaching experience for the entire sample is 14, again suggesting that ChalleNGe teachers are, on the whole, very experienced. But, as was the case with educational qualifications, years of experience varied widely across programs, with some programs having an average teacher experience of more than 20 years and others less than 7. The percentage of teachers who hold teaching certificates, another measure of overall qualification, is also high—both across the sample as a whole and within *most* ChalleNGe programs. The sample average is 78 percent, and the program-specific average is 100 percent for 18 of the 34 programs whose teachers participated in the survey.

## Teacher qualifications and cadet outcomes

We sought to determine if the characteristics of the teacher population has any bearing on cadet outcome measures. With respect to teacher qualifications (e.g., highest degree held, years of teaching experience, teaching certification, teachers' majors and coursework), we found significant variation in teacher qualifications across programs. Only three characteristics (in the aggregate), however, had significant relationships with cadets' average outcomes. The percentage of a program's teachers who majored in what they teach and the teachers' average overall teaching experience were both significantly and negatively related to TABE

improvement. This could indicate that older teachers and those with degrees in the subjects they teach are either less focused on TABE improvement or are less aware of how most effectively to improve cadets' TABE performance. The third and most important teacher qualification metric appears to be the percentage of teachers at a program who have attained *more* than a bachelor's degree. This program characteristic was positively and significantly associated with all cadet outcomes, except the average graduation rate. Ten of the 34 programs surveyed have no teachers with education beyond a bachelor's degree who responded to our survey. This suggests that some programs (and thereby cadets) might gain from an increased percentage of teachers with postgraduate degrees. We recommend, however, that any policy change based on this (or other) findings be made with care since they cannot be confirmed by individual-level analysis (due to the ChalleNGe construct that all cadets are under the purview of all teachers).

## **Pedagogy and cadet outcomes**

Our analysis focused on various pedagogical approaches, including how cadets are assigned to classes and to groups within classes, average class size, how teachers use their instructional time, and their overall pedagogical strategies. Once again, only a few measures had significant relationships with cadet outcomes.

First, we found that programs where male and female cadets are consistently grouped either separately or together have higher 12-month placement rates than programs where gender composition varies. This suggests that consistency in gender grouping is important for these cadets.

Second, we found that programs' average 1-month placement rates are statistically significantly negatively correlated with the number of hours spent instructing the class as a whole. This suggests that students benefit, in the long run, from more one-on-one instruction and less large-group instruction.

Lastly, we found that programs with a higher percentage of teachers using purchased materials tend to have a higher average TABE improvement among their cadets and that programs with a higher concentration of teachers assigning less than 1 hour of homework per week (versus those assigning no homework) have higher cadet graduation rates and higher 1-month placement rates. We suspect that this relationship to TABE improvement may be because some of the most commonly purchased materials are standardized-test preparatory materials. The homework-related findings suggest that cadets respond positively to a small and manageable number of tasks to complete outside the classroom, perhaps instilling a sense of responsibility and accountability. We recommend that teachers or programs not currently assigning homework consider doing so.

Our survey also included subject-specific questions for math and English/language arts teachers only. We focused on these two subject areas because they are the most common focus of competency exams, such as the GED.

## Math

Our analysis of math teachers' classroom strategies revealed several significant relationships between pedagogical practices and average cadet outcomes. When considering the impact of specific math subjects and the extent to which they are covered in a typical class period, for example, we found that focusing instruction on basic math is negatively correlated with programs' graduation rates, 1-month placement rate, 6-month placement rate, and 12-month placement rate. That is, programs whose math teachers emphasize basic math topics, on average, have lower graduation and cadet placement rates. We also found a positive and significant relationship between a focus on advanced math topics and cadets' 6-month placement rate. This suggests that cadets might be better served by including more advanced topics in their math curricula, perhaps because they are more engaging and/or increase cadets' confidence in their ability to understand math concepts.

We also looked into whether the frequency of math-class activities is correlated with cadet outcomes. Only a handful of results are significant, and the importance the activities varies by the cadet outcome being considered. The two most striking findings are the positive and significant correlation of working in small groups and teaching math life skills with multiple positive cadet outcomes. It is likely that these teaching strategies are preparing cadets for life after ChalleNGe (in terms of their postresidential placement), indicating that teachers should consider maximizing their use of these teaching techniques.

Finally, we found that average graduation rates are negatively correlated with the prevalence of multiple-choice tests, suggesting that this evaluation method should be deemphasized.

## English/language arts

We found several statistically significant relationships between English/language arts instructional strategies and cadet outcomes.

First, with respect to reading instruction, emphasis placed on critiquing and/or evaluating text is positively and statistically significantly associated with cadets' 6-month placement rates, at the program level. Specifically, a one-unit increase in this variable is associated with a 20-percentage-point increase in cadets' average 6-month placement rate at that program. The average emphasis placed on critiquing and/or evaluating text is also positively and significantly correlated with cadets' average 12-month placement rate. In this case, a one-unit increase in this variable is associated with an increase in the average 12-month placement rate of 32 percentage points. We

recommend that English/language arts teachers consider incorporating critiquing and/or evaluating text into their lesson plans, as appropriate.

We also found that the frequency of assigning writing to summarize is positively correlated with cadets' average 6-month and 12-month placement rates. Conversely, how often teachers have students write to explain is negatively associated with the average 6-month and 12-month placement rates. These findings suggest that using pedagogical methods that prompt students to interact with texts they are reading and to engage in more thoughtful writing have important implications for cadets' success, both within and outside ChalleNGe.

A number of caveats accompany this analysis. The analysis is somewhat limited by the ChalleNGe construct—which is that all cadets are in the purview of all teachers. Thus we cannot match students to individual teachers but can only measure cadet outcomes at the *average* program level. The real value of this study is its documentation of the differences across ChalleNGe programs and its identification of how these differences *might* impact cadets' success (both within and after ChalleNGe). Although we did find some statistically significant relationships between pedagogical approaches and cadets' average outcomes, we reiterate that statistical significance was somewhat sporadic. These facts suggest that any changes in response to our findings should be made only after further research. From a programmatic standpoint, it may be more efficient to continue to allow program directors to decide how to structure their programs rather than demand that all programs adopt certain teaching strategies or classroom styles.

## Appendix: Teacher Survey

This appendix provides the complete teacher survey. Most teachers took the survey online, using the Checkbox system, rather than responding on paper.

## ChalleNGe Survey

### How Differences in Pedagogical Methods Impact ChalleNGe Program Outcomes

We invite you to participate in a research study conducted by CNA on behalf of the Office of the Assistant Secretary of Defense for Reserve Affairs. Your participation in this study is completely voluntary. The following is a brief description of the study and directions on how to complete a short, on-line survey. If you have any questions about the study or the survey, please contact Dr. Lauren Malone, Principal Investigator, CNA, at [malonel@cna.org](mailto:malonel@cna.org) or (703) 824-2741.

#### PURPOSE OF THE STUDY

CNA is a not-for-profit, federally-funded research and development corporation that does research on a wide range of topics for the Department of Defense and other Federal agencies. One of the areas in which we conduct research is education. CNA has been asked by the Office of the Assistant Secretary of Defense for Reserve Affairs to undertake a study on the ChalleNGe program. Specifically, they have asked us to look at the various ways ChalleNGe teachers approach instruction with the objective of identifying those pedagogical methods and techniques that are most effective. A final goal of the project is to share the results across the ChalleNGe program.

#### THE SURVEY

In order to conduct this study, we are collecting data from all teachers at all of the ChalleNGe sites using this on-line survey. First, please read the information below before deciding whether or not to participate. If you have any questions about anything you do not understand in this survey instrument or about this research study, please contact Dr. Malone, whose contact information is listed above, before proceeding. After each section, please check the box to indicate your agreement with the statement.

#### *Process and Duration*

Your participation in this study will involve your completing a short on-line survey. Most items are multiple choice, but a few ask you to fill in information. It should take approximately 20 minutes. Your participation is completely voluntary. You have the right to refuse to participate and doing so will have no impact on your employment with the ChalleNGe program. If you choose to participate, you may also skip any questions you don't feel comfortable answering or stop completing the survey altogether at any point.

**\*I understand my participation is completely voluntary and that if I choose to refuse to participate, it will have no impact on my employment with the ChalleNGe program. If I choose to proceed, I understand that I may skip any questions I do not feel comfortable answering or stop completing the survey.**

- ☐ Yes
- ☐ No

## ChalleNGe Survey

### *Risks and Benefits*

There are no risks to you for participating in this study and we do not believe that you will experience any discomfort in answering the questions. In addition, you will receive no direct benefit from participation in this study. However, your participation may help the National Guard Youth ChalleNGe program to determine what changes should be made to the program to increase positive outcomes for cadets. This could play a role in increasing General Educational Development (GED) passage rates and/or success for cadets in the job market.

**\* I understand there are no risks to me for participating in this study and that I will receive no direct benefits from my participation.**

- ☐ Yes
- ☐ No



## ChallenGE Survey

### *Data Security and Confidentiality*

Your survey responses will be anonymous. When the results of the research are published or discussed in conferences, no information will be included that would reveal your identity. In addition, data summaries will aggregate individual responses in groups sufficiently large enough to protect the anonymity of individual survey respondents. This survey is being administered using an on-line format. None of the questions will ask for any personal data (you will not be asked to give your name, age, etc.). The email address used to invite you to participate in the survey is not captured when you complete the survey; there is no link between your email address and your completed survey. Your completed survey will be assigned a random respondent code that will be used in place of personal identifiers when your responses are stored by CNA and in all analyses CNA performs. The data will reside on secure servers that are password protected. Access is granted on a need to know basis only.

**\*I understand that my responses will be anonymous and that data collected through the on-line survey will be kept secure.**

- ☐ Yes
- ☐ No

## Challenge Survey

### ***Agency Disclosure Statement***

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### **\* Consent**

**I freely and voluntarily consent to proceeding with the on-line survey.**

- ☐ Yes
- ☐ No

## ChalleNGe Survey

### **Survey Directions**

For each question, choose the answer that best fits. You may skip any questions you do not want to answer. At the end of the survey, you will be asked to click the button that reads "Submit." This will take you to a page that confirms your completion of the survey. If you have any questions or experience any difficulties in completing the survey, please contact Jen Atkin, Research Scientist, CNA, at [atkinj@cna.org](mailto:atkinj@cna.org) or (703) 407-1048.

**Thank you for helping us with this important project.**

## ChalleNGe Survey

National Guard Youth Challenge (ChalleNGe) program.

**At which ChalleNGe program do you teach?**

Select:

**Are you a lead instructor?**

- ☐ Yes
- ☐ No

**Do your male and female cadets take classes together or separately?**

- ☐ Separately, males and females are not in my classroom at the same time
- ☐ Together, males and females are in my classroom at the same time
- ☐ Some of my classes include males and females together, others do not

## ChalleNGe Survey

**Other than the subject(s) you currently teach at ChalleNGe, which other subjects have you taught in the past?**

**How many years of teaching experience do you have in each of the following categories (including this year)?**

Enter a zero where applicable.

	No. of years
Total years of experience:	<input type="text"/>
Years teaching at ChalleNGe:	<input type="text"/>
Years teaching grades 6-12:	<input type="text"/>
Years teaching in alternative programs (such as Job Corps, alternative schools, and ChalleNGe):	<input type="text"/>
Years teaching any other GED prep program:	<input type="text"/>

## ChalleNGe Survey

### What credentials or degrees do you hold?

Please mark all that apply.

- ☐ No degree beyond high school
- ☐ Associates degree/vocational certification
- ☐ BA/BS
- ☐ MA/MS
- ☐ Education specialist/professional diploma requiring at least one year's work beyond a Masters' degree
- ☐ EdD/PhD
- ☐ Other professional degree:

### Do you hold a teaching certificate?

Please select all that apply.

- ☐ Yes, a standard state certificate or advanced professional certificate
- ☐ Yes, national board certification
- ☐ Yes, a certificate requiring additional coursework
- ☐ Yes, an emergency certificate
- ☐ No

### If you have a college degree (BA/BS or higher), what was your major field of study in your highest degree program?

### If applicable, what was your minor field of study in college?

## ChalleNGe Survey

**Have you taken coursework in the teaching of any of the following areas?**

Please select all that apply.

- ☐ Reading
- ☐ Any other language-arts-related subject
- ☐ Elementary or secondary education
- ☐ Special education (including students with disabilities)
- ☐ English language learners/English as a Second Language (ESL)
- ☐ Adult education
- ☐ Mathematics
- ☐ Science
- ☐ Social Studies
- ☐ None of the above

**What is the biggest challenge you face in the ChalleNGe classroom?**

- ☐ Weak prior instruction/low basic level of achievement
- ☐ Cadets don't spend enough time at ChalleNGe
- ☐ Cadets don't spend enough time in the classroom
- ☐ Diverse learners in one classroom
- ☐ Disciplinary issues in the classroom
- ☐ Other

**If you answered Other above, please explain briefly below:**

## ChalleNGe Survey

**Approximately what percentage of your ChalleNGe students pass the GED?**

(Leave blank if you don't know the approximate figure.)

**Who prepared the course materials you use on a daily basis?**

- ☐ I did
- ☐ I did, with other ChalleNGe staff members
- ☐ I use purchased materials
- ☐ I use a mix of self-developed and purchased materials
- ☐ Other

**If you answered Other above, please explain:**

**If you use a mix of self-developed and purchased materials, please indicate the percentage you developed or helped develop:**



## ChalleNGe Survey

**How many students are in your classroom during a typical class period?**

**If your class size varies substantially, please tell us the smallest and largest classes you teach, and the reason(s) for the variation:**

## ChalleNGe Survey

Please answer the following questions based on your experiences with a typical class. For example, please answer time-based questions by indicating how many hours per week you spend on a specific topic or subject in a typical class. If class variation makes it difficult to choose a typical class, please answer the questions based on what you do in the first class you teach each day.

**How much homework do you assign in a typical week?**

- ☐ None
- ☐ Less than 1 hour per week
- ☐ 1-2 hours per week
- ☐ 3-4 hours per week
- ☐ 5+ hours per week

**How are students in your classes assigned to a specific class?**

Please select all that apply.

- ☐ Ability or previous achievement
- ☐ Age
- ☐ Gender
- ☐ Other

**If you selected Other above, please specify:**

**Do you arrange or create groups within the class based on ability or previous achievement? If so, how?**

- ☐ No
- ☐ Yes, I create groups based on:

## ChallenGe Survey

**Instructional time is limited; deciding how to spend class time is therefore an important determinant of student outcomes. How much class time do you spend EACH WEEK on the following tasks?**

	Hours per week						
	None	< 1 hour	1 hour	2 hours	3 hours	4 hours	5+ hours
Instructing the class as a whole	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Instructing small groups of students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Instructing single students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Discussing issues as a class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assisting students as they work in groups	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assisting students as they work independently	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assisting students as they work on homework	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Maintaining order/disciplining students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administering tests or quizzes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administrative tasks (i.e., taking attendance, making announcements, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**How much time each week do you spend tutoring or working with students outside of class?**

Total time to the nearest hour.

## ChalleNGe Survey

**How often do you change your instructional methods for specific students?**

- ☐ The majority of the time
- ☐ Some of the time
- ☐ Rarely
- ☐ Never

**If you change your instructional methods with specific students, why do you do so?**

Please select all that apply.

- ☐ Students are at different places academically
- ☐ Students have different learning styles
- ☐ Other

**If you selected Other above, please briefly explain:**

**Do you use any formal method(s) to ascertain students' learning styles?**

- ☐ No
- ☐ Yes, I use:

**Is there anything else you would like to tell us about your teaching or classroom management style that you believe to be particularly effective with your students?**

## ChalleNGe Survey

**For Math and Language Arts teachers, the remaining questions on the survey are specific to the subject matter you teach. If you are willing to proceed and answer subject-specific questions, please indicate the subject you teach below and additional questions will appear.**

**Which subject(s) do you teach?**

- ☐ English/Language Arts
- ☐ Math
- ☐ Science
- ☐ Social Studies
- ☐ I'd prefer not to say
- ☐ Other

**If you answered Other above, please specify:**

## ChallenGE Survey

### Mathematics specific questions

Please answer the following questions based on your experiences with a typical Math class, such as your 9am class. For example, please answer time-based questions by indicating how many hours per week you spend on a specific topic or subject in a typical class. If class variation makes it difficult to choose a typical class, please answer the questions based on what you do in the first class you teach each day.

#### In your classes how often do you address the following?

	Not covered	Review topic	Minor topic	Major topic
Whole numbers and whole number operations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Problem solving & measurement, using tables/graphs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fractions/percentage changes/proportions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Geometry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Data analysis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Statistics and probability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Algebra (formulas and equations)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Developing reasoning/analytic skills to solve problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learning to communicate math ideas effectively	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**How often do students in your class do each of the following?**

	Never or hardly ever	Once or twice a month	Once or twice a week	Almost every day
Work on problems that reflect real-world situations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Work on problems in small groups or with a partner	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Discuss solutions to math problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Draw a picture or write about how to solve math problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Write reports or do math-related projects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Work with measuring instruments (e.g., rulers)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Work with manipulatives (e.g., geometric solids)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use a calculator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use a computer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Take practice tests	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Practice by teaching or explaining to each other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Work on math "life skills" such as balancing checkbooks, making budgets, calculating sale prices, etc.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Challenge Survey

**How often do you use the following in your class?**

	Never or hardly ever	A few times during the course	Once or twice a month	At least once a week
Multiple choice tests	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Problem sets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Short or long written responses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Individual or group projects or presentations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**At the beginning of the program, how would you rate your students' skills in each of the following?**

	No students are very competent	Few students are very competent	Some students are very competent	Most students are very competent
Addition and subtraction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Multiplication	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Division	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Please indicate which of the following statements is most closely aligned with your mathematics teaching philosophy (neither statement may represent your exact philosophy, but please indicate the statement that comes closer to your philosophy):**

- ☐ Students must be taught math skills based on formulas or algorithms. Instruction should emphasize procedural mathematics and provide step-by-step examples with skill exercises. Focus should be placed on the memorization of basic math facts and on teaching algorithms that efficiently lead to the correct answer.
- ☐ Instruction should be focused on the process of leading to the correct answer, rather than the answer itself. Students are encouraged to represent, describe, and communicate mathematical ideas by a variety of methods. Conceptual understanding is the primary goal; algorithmic fluency will follow secondarily. Students should learn how to make connections between concepts.



## ChalleNGe Survey

### English/Language Arts Specific Questions

Please answer the following questions based on your experiences with a typical English class, such as your 9am class. For example, please answer time-based questions by indicating how many hours per week you spend on a specific topic or subject in a typical class. If class variation makes it difficult to choose a typical class, please answer the questions based on what you do in the first class you teach each day.

#### How much emphasis do you place on the following?

	Not covered	Review topic	Minor topic	Major topic
Grammar	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Literature	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Composition	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reading comprehension	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Study skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Spelling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Challenge Survey

### How often do you use the following types of literature?

	Never	Rarely	Some of the time	Majority of the time
Fiction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Poetry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mythology/folk tales	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Biography	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drama	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Argument and persuasion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Procedural	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other non-fiction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In addition to full-length selections appearing in any textbook/workbook you may use, how many books will you require your students to read during the course of this class?

### How often do you do the following?

	Never or hardly ever	Once or twice a month	Once or twice a week	Almost every day
Ask a student to read aloud	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ask students to write about what they have read	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Give students time to read books of their choice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ask students to do a group activity about what they read	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch movies or videos, listen to tapes or CDs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ask students to make predictions about what they are reading as they are reading	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ask students to summarize what they have read	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Challenge Survey

**To what extent do you emphasize the following processes when reading informational and literary texts in class?**

	Not at all	To a small extent	To a moderate extent	To a large extent
Locate/recall material	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Integrate/interpret material	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Critique/evaluate material	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**How often do you ask your students to write for each of the following purposes?**

	Never or hardly ever	A few times during the course	Once or twice a month	At least once a week
Explain (e.g., provide information about a topic or steps in a process)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Persuade (e.g., convince someone to do something)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Convey experience (e.g., write about personal or imagined experiences)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Summarize/synthesize material they have read	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**When you are teaching writing, what percentage of your instructional time is spent on each of the following?**

	0-24%	25-49%	50-74%	75-89%	90+%
Development of ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Organization of ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Effectiveness of expression (e.g., sentence variety, word choice, tone)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mechanics and conventions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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## **The CNA Corporation**

This report was written by CNA Corporation's Resource Analysis Division (RAD).

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